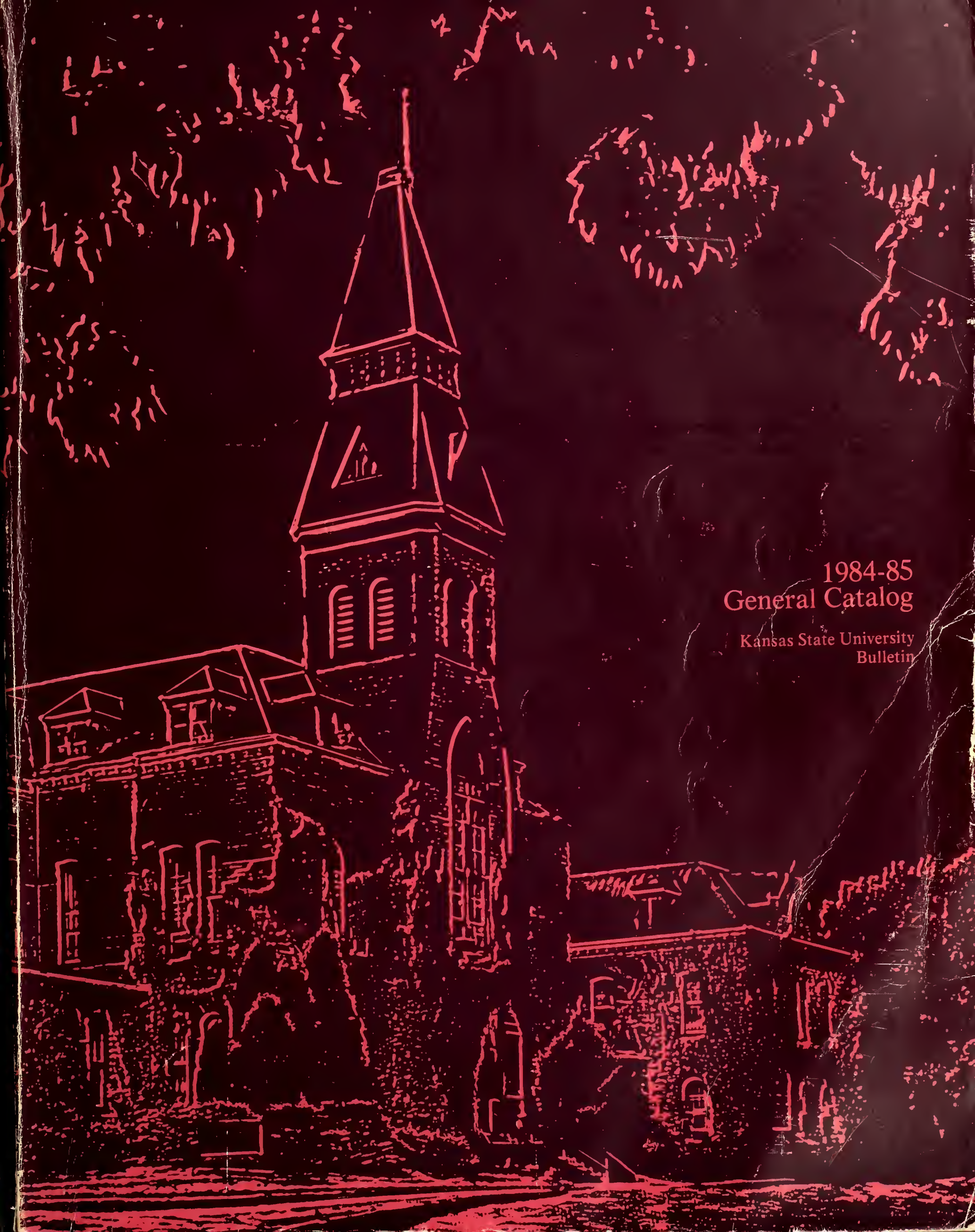

1984-85 General Catalog

Kansas State University Bulletin

Kansas State University Bulletin 1984-85

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Information

You may call **toll-free** from any place in Kansas for information about admission to Kansas State University. Dial 1-800-432-8270 twenty-four hours a day. After business hours your call will be recorded and returned the next working day. The University operator's telephone number from off-campus phones is 913-532-6011.

Prospective undergraduate students should communicate with the Director of Admissions in 118 Anderson Hall, phone 913-532-6250.

Prospective graduate students should communicate with the Dean of Graduate School in 101 Fairchild Hall, phone 913-532-6191.

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Volume 68 **June 1984** **Number 3**

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Contents

Glossary

A/Pass/F: A course in which a student earning a grade of A will have an A recorded for that course. A grade of B, C, or D will be recorded as a Pass. A grade of F will be recorded as an F.

Academic load: The total number of semester hours for which a student is enrolled in one semester.

Advanced standing: Credit awarded for previous work or testing.

Advisor: A faculty member who provides information for a student and makes recommendations in the area of courses, requirements, prerequisites and programs of study. All students are assigned advisors from the department or college in which they are enrolled.

Audit: Attending a class regularly without participating in class work and without receiving credit. A nonrefundable fee of $1.00 a semester hour is charged if you are not a full-time student. Lab courses may not be audited.

B.A.: Bachelor of arts degree. Courses are selected from a variety of disciplines although concentrations are in one or two areas. A modern language is required for a B.A. degree.

B.S.: Bachelor of science degree. A specified program of required courses with fewer electives than the B.A. A modern language may be taken but is not required.

Classification: Level of progress toward a degree. An undergraduate student is classified as a freshman, sophomore, junior, or senior, depending on the number of semester hours completed.

College: An academic unit of the University. Kansas State University is composed of eight colleges and a Graduate School.

Concurrent enrollment: A course taken at the same time as another. Abbreviation: Conc.

Course: A specific class in any subject.

Credit-by-examination: An oral or written examination whereby a student may receive credit from the University without registering for a course.

Credit hour: A unit of measurement used in determining the quantity of work taken by a student. Each credit hour is roughly equivalent to one hour of class time per week. For example, a class meeting three hours a week would be a three-credit-hour class.

Credit/no credit: Courses for which successful completion is recorded as credit and failure is recorded as no credit. No other grades are given for such courses and they are not figured into the grade point average.

Curriculum: A program of courses offered to meet the requirements for a degree in a particular field of study.

Degree program: Courses required for completion of a particular degree.

Department: A unit within a college representing a discipline, such as the Department of Statistics or the Department of Agronomy.

Discipline: An area of study representing a branch of knowledge, such as mathematics.

Dismissal: Students who neglect their academic responsibilities may be dismissed on recommendation of an academic dean.

Drop/add: Changing the class assignment by adding a course, dropping a course or both. This must be done through the student's advisor.

Double major: Having two programs of academic study, each requiring considerable coursework.

Dual degree: Students may elect in some cases to earn two degrees at one time.

Elective: Courses chosen by the student that are not required for the major or minor. The number of hours of electives required for graduation varies according to student's major.

Enrollment: The process of selecting courses and arranging a schedule for the next semester.

Extracurricular: Activities such as band, debate, and journalism for which students may earn credit toward graduation. Extracurricular activities are counted as electives.

Financial aid: Help for students who lack funds to pay for college. Aid is available from grants, loans, scholarships, and work/study employment.

Grade point average (GPA): A measure of scholastic performance. A GPA is obtained by dividing the number of grade points by the hours of work attempted. For the purpose of GPA, an A = 4 points, B = 3 points, a C = 2 points, a D = 1 point, and an F = 0 points.

Graduate student: A student who has completed a bachelor's degree and has met all the requirements for admission to the Graduate School.

Hour: The unit by which coursework is measured. The number of semester hours assigned to a course is usually determined by the number of hours a class meets per week.

Intersession: In early January, late May, and early June, 40 to 75 regular and new or experimental courses are offered. They usually run for two weeks, and can fulfill degree requirements. Intersession offers the opportunity to explore areas of study which otherwise would not be possible during regular semesters.

Major: The subject or subject areas on which a student chooses to place principal academic emphasis.

Minor: A student's secondary field of academic emphasis.

Option: An approved group of courses creating a speciality within a major field of study.

Orientation: Activities and programs designed to help the new student become acquainted with the University.

Prerequisite: A requirement, usually credit in another course, which must be met before a particular course can be taken. Abbreviation: Pr.

Probation: Undergraduate students may be placed on academic probation by an academic dean if they do not meet the requirements outlined in this catalog under the section called "Grades."

Secondary major: Interdisciplinary major which must be completed along with a first major course of study.

Scholastic honors: Undergraduate students may be designated as summa cum laude, magna cum laude, or cum laude based on the excellence of their KSU academic average.

Special student: A student taking courses at KSU but not regularly enrolled in work for a degree.

Transcript: An official copy of a student's permanent academic record.

Transfer student: A student who terminates enrollment in one college or university and subsequently enrolls in KSU.

Undergraduate student: A University student who has not received a bachelor's degree.

Calendar

Fall Semester 1984

August 22-24, Wednesday-Friday
Enrollment and fee payment for all students, including testing and orientation.

August 27, Monday
Classes begin; late fee, $10.00 for enrollment.

September 3, Monday
Labor Day. No classes.

September 7, Friday
Last day to enroll without dean's permission.

September 10-21, Monday-Friday
Sign-up for A/Pass/F grading option.

September 21, Friday
Last day for applications for December graduation for undergraduate and graduate students due in deans' offices.

September 24, Monday
20th class day; late fee $25.00 for subsequent enrollment.

October 1, Monday
Last day to drop course without a W being recorded.

October 5, Friday
Last day to withdraw and receive a partial refund.

October 5, Friday
Typed copies of doctors' dissertations, with abstracts, due in major professor's office. Approval forms may be obtained in graduate dean's office.

October 12, Friday
Mid-semester grade reports due in registrar's office.

October 12, Friday
Typed copies of masters' theses and reports, with abstracts, due in major professor's office. Approval forms may be obtained in graduate dean's office.

October 26, Friday
Dissertation approval forms due in graduate dean's office.

November 1, Thursday
Masters' approval forms due in graduate office. Non-thesis, non-report approval forms due on the same date as thesis and report approval forms.

November 2, Friday
Last day course may be dropped before end of semester.

November 2, Friday
Final date of doctors' final examinations.

November 9, Friday
Final date of masters' final examinations.

November 13, Tuesday
Final copies of doctors' dissertations due in graduate dean's office.

November 20, Tuesday
10 p.m. Thanksgiving student recess begins.

November 20, Tuesday
Final copies of masters' theses and report due in graduate dean's office.

November 26, Monday
Classes resume.

December 7, Friday
Applications for March graduation (for graduate students only) due in graduate dean's office.

December 15, Saturday
December graduation.

December 17-21, Monday-Friday
Semester examinations for all students.

December 22-January 1, Saturday-Tuesday
University closed.

December 26, Wednesday noon
Deadline for grades to registrar's office.

Spring Semester 1985

January 14-15, Monday-Tuesday
Enrollment and fee payment for all students, including testing and orientation.

January 16, Wednesday
Classes begin; late fee $10.00 for enrollment.

January 25, Friday
Last day to enroll without dean's permission.

January 28-February 8, Monday-Friday
Sign-up for A/Pass/F grading option.

February 8, Friday
Last day for applications for May graduation for undergraduate and graduate students due in deans' offices.

February 12, Tuesday
20th class day; late fee $25.00 for subsequent enrollment.

February 19, Tuesday
Last day to drop courses without a W being recorded.

February 22, Friday
Last day for students to withdraw and receive a partial fee refund.

March 1, Friday
Mid-semester grade reports due in registrar's office.

March 1, Friday
Typed copies of doctors' dissertations, with abstracts, due in major professor's office. Approval forms may be obtained in graduate dean's office.

March 8, Friday
Tentative copies of masters' theses and reports, with abstracts, due in major professor's office.

March 9, Saturday noon
Spring break begins.

March 18, Monday
Classes resume.

March 28, Thursday
Dissertation approval forms due in graduate dean's office.

March 29, Friday
Last day a course may be dropped before end of semester.

April 4, Thursday
Masters' approval forms due in graduate office for masters' candidates. Non-thesis, non-report approval forms due on the same date as thesis and report approval forms.

April 5, Friday
Final date of doctors' final examinations.

April 8, Monday
Holiday. No classes. Easter is April 7.

April 11, Thursday
Final date of masters' final examinations.

April 12, Friday
Final copies of doctors' dissertations due in graduate dean's office.

April 19, Friday
Final copies of masters' theses and reports due in graduate dean's office.

May 3, Friday
Applications for July graduation (for graduate students only) due in graduate dean's office.

May 9, Thursday
Deadline for submitting tentative grade sheets for graduating seniors.

May 10-15, Friday-Wednesday
Semester examinations for all students.

May 16, Thursday
Deadline for returning tentative grade change sheets.

May 17-18, Friday-Saturday
Commencement ceremonies.

May 20, Monday noon
Deadline for grades to registrar's office.

Summer Term 1985

June 3-July 26
Sessions of eight-, three-, and one-week's duration.

Fall Semester 1985

August 21-23, Wednesday-Friday
Enrollment and fee payment for all students, including testing and orientation.

August 26, Monday
Classes begin; late fee, $10.00 for enrollment.

September 2, Monday
Labor Day. No classes.

September 6, Friday
Last day to enroll without dean's permission.

September 9-20, Monday-Friday
Sign-up for A/Pass/F grading option.

September 20, Friday
Last day for applications for December graduation for undergraduate and graduate students due in deans' offices.

September 23, Monday
20th class day; late fee $25.00 for subsequent enrollment.

September 30, Monday
Last day to drop course without a W being recorded.

October 4, Friday
Last day to withdraw and receive a partial refund.

October 4, Friday
Typed copies of doctors' dissertations, with abstracts, due in major professor's office. Approval forms may be obtained in graduate dean's office.

October 11, Friday
Mid-semester grade reports due in registrar's office.

October 11, Friday
Typed copies of masters' theses and reports, with abstracts, due in major professor's office. Approval forms may be obtained in graduate dean's office.

October 25, Friday
Dissertation approval forms due in graduate dean's office.

October 31, Thursday
Masters' approval forms due in graduate office. Non-thesis, non-report approval forms due on the same date as thesis and report approval forms.

November 1, Friday
Last day course may be dropped before end of semester.

November 1, Friday
Final date of doctors' final examinations.

November 8, Friday
Final date of masters' final examinations.

November 19, Tuesday
Final copies of doctors' dissertations due in graduate dean's office.

November 19, Tuesday
Final copies of masters' theses and reports due in graduate dean's office.

November 26, Tuesday
10 p.m. Thanksgiving student recess begins.

December 2, Monday
Classes resume.

December 6, Friday
Applications for March graduation (for graduate students only) due in graduate dean's office.

December 16-20, Monday-Friday
Semester examinations for all students.

December 23, Monday noon
Deadline for grades to registrar's office.

Spring Semester 1986

January 13-14, Monday-Tuesday
Enrollment and fee payment for all students, including testing and orientation.

January 15, Wednesday
Classes begin; late fee $10.00 for enrollment.

January 24, Friday
Last day to enroll without dean's permission.

January 27-February 7, Monday-Friday
Sign-up for A/Pass/F grading option.

February 7, Friday
Last day for applications for May graduation for undergraduate and graduate students due in deans' offices.

February 11, Tuesday
20th class day; late fee $25.00 for subsequent enrollment.

February 18, Tuesday
Last day to drop course without a W being recorded.

February 21, Friday
Last day for students to withdraw and receive a partial fee refund.

February 28, Friday
Mid-semester grade reports due in registrar's office.

February 28, Friday
Typed copies of doctors' dissertations, with abstracts, due in major professor's office. Approval forms may be obtained in graduate dean's office.

March 7, Friday
Tentative copies of masters' theses and reports, with abstracts, due in major professor's office.

March 8, Saturday noon
Spring break begins.

March 17, Monday
Classes resume.

March 27, Thursday
Dissertation approval forms due in graduate dean's office.

March 28, Friday
Last day a course may be dropped before end of semester.

March 31, Monday
Holiday. No classes. Easter is March 30.

April 3, Thursday
Masters' approval forms due in graduate office for masters' candidates. Non-thesis, non-report approval forms due on the same date as thesis and report approval forms.

April 4, Friday
Final date of doctors' final examinations.

April 10, Thursday
Final date of masters' final examinations.

April 11, Friday
Final copies of doctors' dissertations due in graduate dean's office.

April 18, Friday
Final copies of masters' theses and reports due in graduate dean's office.

May 2, Friday
Applications for July graduation (for graduate students only) due in graduate dean's office.

May 8, Thursday
Deadline for submitting tentative grade sheets for graduating seniors.

May 9-May 14, Friday-Wednesday
Semester examinations for all students.

May 15, Thursday
Deadline for returning grade change sheets.

May 16-17, Friday-Saturday
Commencement ceremonies.

May 19, Monday noon
Deadline for grades to registrar's office.

Summer Term 1986

June 9-August 1
Sessions of eight-, three-, and one-week's duration.

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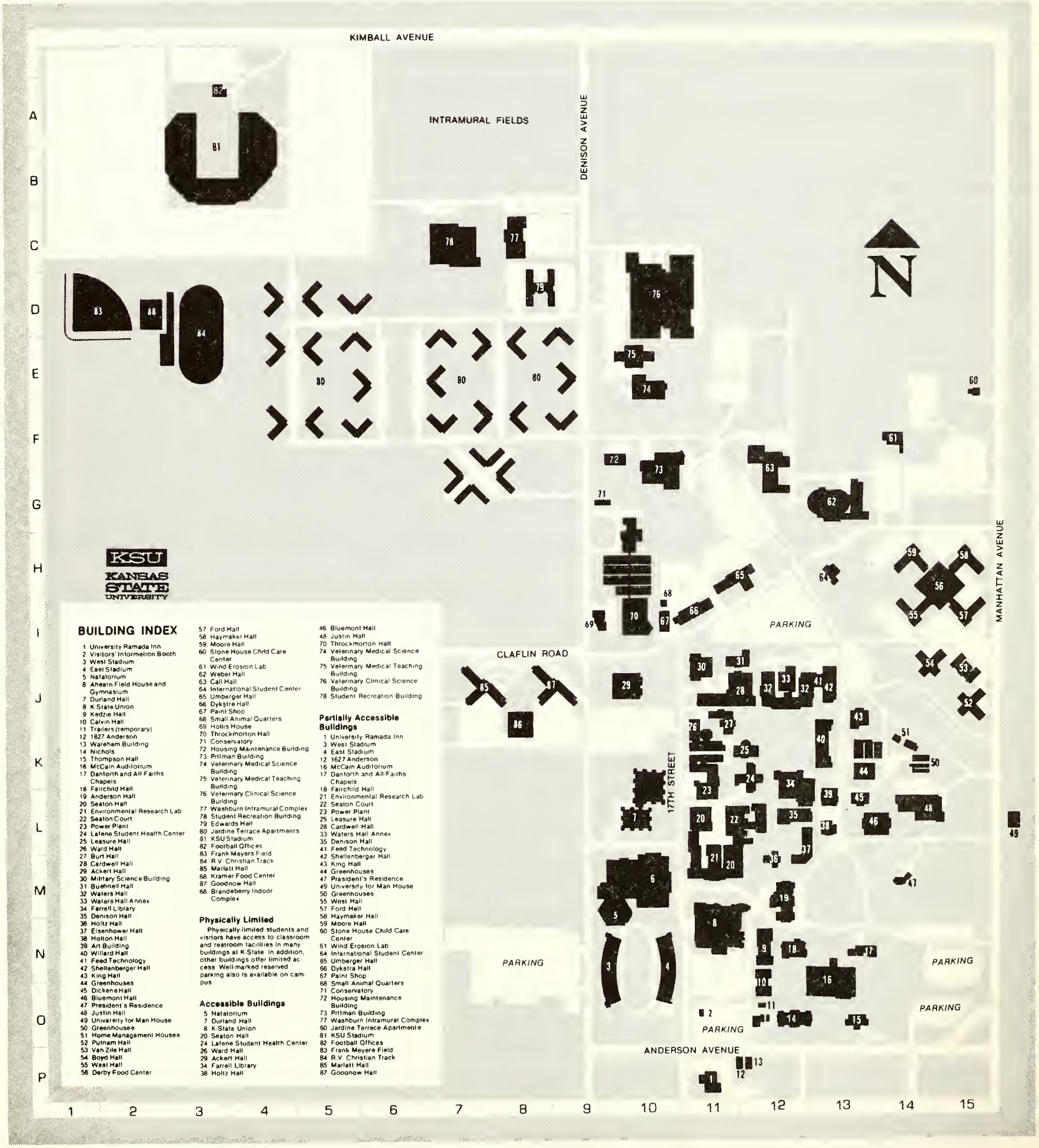
Kansas State University

Manhattan, Kansas
Campus Map



KSU
KANSAS STATE UNIVERSITY

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75 Veterrnary Medical Teaching Building
76 Veterrnary Clrnical Scrence Building
77 Washburn Intramural Complex
78 Student Recreation Buildrng
79 Edwards Hell
80 Jardine Terrace Apartments
81 KSU Stadium
82 Football Offices
83 Frank Meyers Field
84 R.V. Christian Track
85 Marlatt Hall
86 Kramer Food Center
87 Goodnow Hall
88 Brandeberry Indoor Complex

Physically Limited

Physically-limited students and visitors have access to classroom and restroom facilities in many buildings at K-State. In addition, other buildings offer limited access. Well-marked reserved parking also is available on campus

Accessible Buildings

5 Natatorium
7 Durland Hall
8 K-State Union
20 Seaton Hall
24 Lafene Student Health Center
26 Ward Hall
29 Ackert Hall
34 Farrell Library
38 Holtz Hall
46 Bluemont Hall
48 Justin Hall
70 Throckmorton Hall
74 Veterinary Medical Science Building
75 Veterinary Medical Teaching Building
76 Veterinary Clinical Science Building
78 Student Recreation Building

Partially Accessible Buildings

1 University Ramada Inn
3 West Stadium
4 East Stadium
12 1627 Anderson
16 McCain Auditorium
17 Danforth and All-Faiths Chapels
18 Fairchild Hall
21 Environmental Research Lab
22 Seaton Court
23 Power Plant
25 Leasure Hall
28 Cardwell Hall
33 Waters Hall Annex
35 Denison Hall
41 Feed Technology
42 Shellenberger Hall
43 King Hall
44 Greenhouses
47 President's Residence
49 University for Man House
50 Greenhouses
55 West Hall
57 Ford Hall
58 Haymaker Hall
59 Moore Hall
60 Stone House Child Care Center
61 Wind Erosion Lab
64 International Student Center
65 Umberger Hall
66 Dykstra Hall
67 Paint Shop
68 Small Animal Quarters
71 Conservatory
72 Housing Maintenance Building
73 Pittman Building
77 Washburn Intramural Complex
80 Jardine Terrace Apartments
81 KSU Stadium
82 Football Offices
83 Frank Meyers Field
84 R.V. Christian Track
85 Marlatt Hall
87 Goodnow Hall

The Catalog

The General Catalog

The KSU General Catalog is designed to provide reference material for those interested in academic policies, procedures, and programs of the University.

If you need general information about KSU, check the table of contents or the index for specific topics of interest.

Degree requirements and programs are organized by colleges and departments. Course descriptions are provided to help you and your academic advisor plan your academic choices.

The following course description key explains the system used for courses listed throughout the catalog.

Sample course description

FCDEV 310. The Preschool Child. (3) I, II, S. Principles of development and growth of children from conception to five years of age in homes and in groups. Pr.: PSYCH 110 and sophomore standing. FCDEV-310-1-1305

Course number

The letters **FCDEV** denote the department in which the course is offered.

The three digits of the course number **310** represent the level of the course.

Level numbers:

000-099	Not applicable toward degree requirements.
100-299	Lower division undergraduate. Designed as freshman-sophomore courses.
300-499	Upper division undergraduate. Designed as junior-senior courses.
500-699	Upper division undergraduate. Primarily for juniors and seniors, but also eligible for graduate credit. Courses numbered 500 may be taken for graduate credit only in a minor field. Courses numbered 600 may be taken for credit in a graduate student's major.
700-799	Graduate and upper division, primarily for graduate level.
800-899	Graduate level for masters' courses and professional courses beyond the undergraduate level.
900-999	Graduate level, primarily for doctoral candidates.

The number in parentheses **(3)** following the course title indicates the units of credit given for the course. Each credit unit usually represents one 50-minute period of lecture or recitation each week of the semester.

The **I, II, S** following the course title indicates the semester, or semesters, each course is usually offered.

I . . . . . fall semester
II . . . . . spring semester
S . . . . . summer school

The abbreviation **Pr.** indicates prerequisites for the course. In the sample course, students would be required to have sophomore standing and to have completed PSYCH 110 before enrolling for FCDEV 310. Some courses may allow concurrent enrollment in other courses. This is indicated by the abbreviation **Conc.**

Other publications

Publications concerning a number of specific topics are available on request. Contact the offices indicated below for additional information.

Office of Admissions
118 Anderson Hall 532-6250

K-State Viewbook: an introduction to Kansas State University, including photographs and application information and forms.

Study Guides: brief descriptions of curricula and career opportunities in many fields. Order form available on request.

Summer School Bulletin: course descriptions and admission information. Available in early spring.

Late Afternoon and Evening Course Bulletin: information and course descriptions for classes starting after 4:00 p.m. on campus during fall and spring semesters. Available in December and July.

New Student Programs
111 Anderson Hall 532-6318

Your First Year: a handbook for new students.

Office of Student Financial Assistance
116 Fairchild Hall 532-6420

Financial Aid Information: an introduction to financial aid at Kansas State University.

Financial Aid Instructions: information concerning application and award procedures.

Housing Office
Pittman Building 532-6453

Housing: housing opportunities and procedures for obtaining housing on and off campus and during summer school.

Office of University Relations
8 Anderson Hall 532-6415

Facts: pocket-size fact sheet about the University.

Campus Tours: a self-guided tour map of the KSU campus. Guided tours are available on request.

Campus Map: a complete map of the campus.

In addition to these publications, many of the colleges and departments have printed material concerning programs and curricula. Contact individual departments for specific information.

Faculty

Each academic department at Kansas State University is described in this catalog. In those departmental sections, faculty members are listed by their last names. Faculty members who are on the graduate faculty have an asterisk following their names.

The University

Kansas State University

The University, founded February 16, 1863, was established under the Morrill Act, by which land-grant colleges came into being.

At first the University was located on the grounds of the old Bluemont Central College, chartered in 1858, but in 1875 most of the work of the University was moved to the present site.

The 668-acre campus is in northern Manhattan, convenient to both business and residential sections. Most buildings are constructed of native limestone.

Manhattan is situated in the rolling Flint Hills of northeast Kansas, 125 miles west of Kansas City via Interstate Highway 70. Five miles north of the city is Tuttle Creek Reservoir, one of the largest in the Midwest.

Off-campus experimental work in agriculture is accomplished through the Kansas Agricultural Experiment Station and its five branch stations—at Hays, Garden City, Colby, Parsons, and Tribune. University-owned and -leased land at the station sites and 11 experimental fields exceeds 12,000 acres.

Educational work in agriculture, home economics, 4-H, and community development is conducted throughout Kansas in cooperation with 105 County Extension Councils legally established for this purpose.

Objectives of the educational program

The objective of the educational program at Kansas State University is to develop individuals capable of applying enlightened judgment in their professional, personal, and social lives.

To that end the University program is designed:

I. To provide full and efficient counseling and guidance to students at the University. Specifically, this means to:

1. Learn and make known to students all that is possible and useful about their interests, aptitudes, and abilities.

2. Apply that knowledge to the students' choice of courses and curricula as fully as possible without encroaching harmfully on their initiative and feeling of self-responsibility.

3. Provide continuing guidance for students according to their needs.

II. To prepare students for an occupation or a profession which includes an organized body of information and theory so they may realize their creative potential. More specifically this means that students should acquire:

1. The ability to recognize and master fundamental principles in their fields of specialization.

2. The knowledge basic to their special fields of study.

3. The ability to reason critically from facts and recognized assumptions to useful technical conclusions.

4. The basic skills associated with their fields of study.

5. A professional attitude in their chosen work.

III. To provide all students with an opportunity to gain the knowledge and abilities members of a democratic society need, whatever occupation or profession they expect to enter. Specifically, this means that through its program the University undertakes to help the student:

1. Develop communication skills.

2. Develop the ability to apply critical and creative thinking to the solution of theoretical and practical problems.

3. Understand the basic concepts of the natural sciences, the interrelations of the natural and social sciences, and the impact of science on society.

4. Comprehend and evaluate the processes and institutions in society at home and abroad, and develop a dynamic sense of personal responsibility as effective citizens in a democratic society.

5. Develop habits of self-evaluation, responsibility, and enterprise that will increase the effectiveness of the educative process in college, and provide the basis for continued self-improvement.

6. Develop a well-adjusted personality, good character traits, and a sound philosophy of life.

7. Prepare for effective participation in family life.

8. Utilize actively and fully the capacity for aesthetic appreciation and enjoyment.

IV. To stimulate the faculty and students to extend the boundaries of knowledge through critical and creative thinking and experimentation.

V. To provide the facilities for extending education outside the boundaries of the campus to the members of the community that the institution serves.

Accreditation

Kansas State University is fully accredited by the North Central Accrediting Association and by various professional accrediting agencies. Credit earned at KSU is transferable to other institutions.

The faculty

The faculty at Kansas State University is dedicated to excellence in teaching, student advising, research, extension education, and scholarly achievement. In the fall of 1980, more than three-fourths of the full-time faculty members held the highest degrees awarded in their academic fields.

KSU recognizes superior teaching with annual faculty awards. Citations for the Outstanding Teachers of the Year, and for the Distinguished Graduate Faculty Member are presented at Commencement. KSU also honors faculty members who contribute to the expansion of knowledge in their respective fields.

The faculty at KSU also is committed to public and professional service. Many are elected or appointed each year to positions of leadership in state, national, and international professional and service organizations.

General Faculty

General Administration

ACKER, DUANE, President (1975). BS 1952, MS 1953, Iowa St. Univ.; PhD 1957, Okla. St. Univ. (GF)

BEATTY, DANIEL D., Vice Pres. for Business Affairs; Prof. of Accounting (1956). AB 1947, Hope Col.; MBA 1949, Univ. of Mich.

BECK, GLENN H., Vice Pres. for Agriculture Emeritus (1936). BS 1936, Univ. of Idaho; MS 1938, Kan. St. Univ.; PhD 1950, Cornell Univ.

BOWER, ROBERT K., Instr.; Publications Editor, Office of University Relations (1981). BA 1970, Simpson Col.; MA, Univ. of Wyo.

CLEGG, VICTORIA L., Instr., Office of Educational Resources (1976). BS 1965, Kan. St. Univ.; MA 1972 Wichita St. Univ.; PhD 1979, Kan. St. Univ.

COOL, VINCE J., Assoc. Dir. of Planning (1957). BS 1951, Kan. St. Univ.

COOPER, HELEN G., Asst. Dir., Univ. Facilities Architectural Service (1983). BS 1978, Kan. St. Univ.

COYNER, SANDRA J., Asst. Prof.; Dir. of Women's Studies (1978). BA 1967, Rice Univ.; MA 1969, Bryn Mawr Col.; PhD 1975, Rutgers Univ. (GF)

CROSS, GENE B., Vice Pres., Univ. Facilities (1978). BS 1956, MS 1963, Univ. of Utah.

DAWES, BARBARA E., Instr.; Asst. Dir. of Admissions (1979). BS 1961, St. Mary Col. Leavenworth; MS 1979, Kan. St. Univ.

DOWNEY, RONALD G., Assoc. Prof.; Research Psychologist, Center for Student Development (1975). BA 1966, Univ. of Tex.; MA 1968, PhD 1971, Temple Univ.

ELKINS, RICHARD N., Instr.; Dir. of Admissions (1966). BS 1956, MS 1963, Kan. St. Univ.

EVANS, ROBERT W., Dir. Student Financial Assistance (1981). BA 1973, Ottawa Univ.; MS 1976, Emporia State Univ.

FERGUSON, FRED L., Jr., Dir. of Buildings and Utilities (1980).

FEYERHARM, WILLIAM R., Asst. Provost for Academic Affairs; Assoc. Prof. (1979). AB 1959, Carleton Coll.; MA 1964, PhD 1971, Univ. of Wis.

FOSTER, DONALD E., Instr.; Univ. Registrar (1965). BS 1960, MS 1961, Kan. St. Univ.

FRANK, RONALD E., Instr.; Television Specialist, Office of University Relations (1980). BA 1972, Fort Hays St. Univ.; MS 1979, Kan. St. Univ.

GARVIN, RICK L., Instr., Office of Educational Resources (1972). BA 1970, San Jose St. Col.

GERRITZ, ELLSWORTH M., Dean/Prof. Emeritus, Admissions and Records (1954). BE 1937, St. Cloud St. Teach. Col.; MA 1948, PhD 1951, Univ. of Minn.

GIBSON, KARYN A., Instr.; Asst. Editor, Publications, Office of University Relations (1980). BS 1978, Univ. of Kan.

GULLETTE, JON M., Dir. of General Services (1982). BA 1971, Univ. of South Fla.

HEIN, CHARLES R., Director of Communications (1982). BA 1956, Wayne St. Col.

HOYT, DONALD P., Asst. Provost; Prof. (1968). BS 1948, Univ. of Ill.; MA 1950, PhD 1954, Univ. of Minn. (GF)

HURLEY, DOUGLAS E., Instr.; Assoc. Registrar (1976). BA 1970, Miami Univ. of Ohio; ME 1976, Univ. of Vt.

ISCH, JAMES L., Instr.; Asst. Budget Officer (1977). BS 1972, Kan. St. Univ.; MBA 1975, Boston Univ.

JOHNSON, MICHAEL B., Asst. to the Pres. (1980). DDS 1963, Univ. of Mo.-K.C.

KOEPPE, OWEN J., Provost; Prof. (1980). AB 1949, Hope Col.; MS 1951, Univ. of Ill.; PhD 1953, Univ. of Ill. (GF)

LAMBERT, JOHN P., Assoc. Prof.; Dir. of Campus Safety (1964). BS 1959, Lebanon Valley Col.; MS 1963, Univ. of Mich.; PhD 1975, Kan. St. Univ.

LIPPENBERGER, RAYMOND E., Asst. Prof., Univ. Facilities Architectural Services (1963). BS 1936, Kan. St. Univ.

LIVERANCE, DARWIN D., Dir. of Personnel Services (1980). MA 1968, Mich. St. Univ.; MS 1978, Ind. Univ.

McCAIN, JAMES ALLEN, President Emeritus (1950). AB 1926, LLD 1951, Wofford Col.; MA 1929, Duke Univ.; EdD 1946, Stanford Univ.; LLD 1964, Univ. of Mont.; DSc 1967, Andhra Pradesh St. Univ. (India); LLD 1965, Colo. St. Univ.

MILNER, LAURA M., Instr., New Student Programs (1981). BA 1978, Univ. of Ga.; MS 1981, Kan. St. Univ.

MOEDER, LAWRENCE E., Asst. Dir., Student Financial Assistance (1977). BS 1977, MS 1980, Kan. St. Univ.

PALLETT, WILLIAM H., Instr., Educational Resources (1982). MA 1975, Univ. of Neb.

PERRY, RALPH H., Asst. Prof.; Comptroller (1946). BS 1946, Kan. St. Univ.

PETERS, CHESTER E., Prof.; Vice Pres. for Student Affairs (1947). BS 1947, MS 1950, Kan. St. Univ.; PhD 1953, Univ. of Wis.

PLATT, CYNDY S., Instr.; Asst. Dir. of Admissions (1978). BS 1974, MS 1977, Kan. St. Univ.

ROCHAT, CARL R., News Editor; Asst. Dir., Office of University Relations; Assoc. Prof. of Journalism (1953). BS 1940, Kan. St. Univ.; MS 1948, Univ. of Ill.

RUGGLES, BERTRAM L., Asst. Prof.; Dir., Employee Relations (1972). BS 1942, Iowa St. Univ.; MA 1950, American Univ.

SEATON, RICHARD H., University Attorney (1971). AB 1959, Harvard Col.; LLB 1963, Harvard Law School.

SHEPARD, JIM B., Asst. Prof., Univ. Facilities Architectural Services (1967). BS 1959, Kan. St. Univ.

STONE, ARTHUR J., Jr., Dir. of KSU Police Dept. (1968). Assoc. of Arts 1972, MS 1978, Wichita St. Univ.

TARRANT, DONALD H., Instr.; Asst. Dir., Office of Educational Resources (1970). BS 1948, Moringside Col.; MS 1959, Iowa St. Univ.

THOMPSON, DOROTHY, Instr.; Dir. of Affirmative Action (1972). BS 1959, Wis. St. Univ.; MA 1965, Univ. of Wyo.; JD 1978, Washburn Univ. Law School.

TROTTER, MARILYN B., Instr.; Dir. New Student Programs (1967). BS 1965, MS 1967, Kan. St. Univ.

UPHAM, JAMES A., Assoc. Dir. (1967). BS 1943, MS 1969, Kan. St. Univ.

WALTERS, GLENDA S., Assoc. Dir., Student Financial Assistance (1975). BS 1974, MS 1975, Emporia St. Univ.; MS 1979, Kan. St. Univ.

WILSON, LARRY T., Instr., Univ. Facilities Architectural Services (1978). BS 1962, Kan. St. Univ.

WOODWARD, JANET R., Instr.; Asst. to the Pres. (1976). AB 1962, Univ. of No. Colo., MS 1975, Kan. St. Univ.

Alumni Association and Foundation

CARLIN, TOM, Dir. of Communications; Dir. of Publications, Foundation and Alumni Association (1978). BS 1972, Kan. St. Univ.

LONGBERG, LESLIE C., Controller (1977). BS 1968, Kan. St. Univ.; MBA 1973, Univ. of Western Fla.; CPA 1974, Kansas.

LOUB, ARTHUR F., Exec. Vice Pres., KSU Foundation (1979). BA 1952, Duke Univ.

MOORE, MARK S., Dir. of Planned Giving; Dir. of Annual Giving (1979). BS 1974, Kan. St. Univ.

RENZ, AMY BUTTON, Asst. Dir., KSU Alumni Association (1977). BS 1976, Kan. St. Univ.

WEIGEL, LAWRENCE N., Exec. Dir., KSU Alumni Association (1978). BS 1967, MS 1968, Kan. St. Univ.

Graduate School

BILES, BERTRAM R., Asst. Dean, (1972). BA 1963, PhD 1976, Kan. St. Univ.

KRUH, ROBERT F., Dean of the Graduate School; Prof. of Chemistry (1967). AB 1948, PhD 1951, Wash. Univ., St. Louis. (GF)

LOWMAN, ROBERT P., Asst. Dean for Research Services; Asst. Prof. of Psychology. AB 1967, Univ. of Southern Calif.; MA 1969, PhD 1973, Claremont Col.

NOONAN, JOHN P., Assoc. Dean of Graduate School (1947). Prof. of English (1968). BS 1947, Rockhurst Col.; MS 1948, Kan. St. Univ.; PhD 1955, Denver Univ. (GF)

Student Personnel Services

AKIN, JAMES N., Assoc. Dir., Career Planning and Placement Center (1966). BS 1960, MS 1964, Kan. St. Univ.

ALLEN, SUSAN L., Instr., Center for Student Development (1983). PhD 1980, Univ. of Kan.

ARBUTHNOT, RICHARD E., Hall Director, Housing (1982). BS 1981, Wayne St. Col.

ARCK, WILLIAM, Hall Director, Housing (1982). BS 1978, MS 1979, Kan. St. Univ.

BASCOM, CHARLES H., Assoc. Prof., Lafene Student Health Center (1981). MD 1956, Univ. of Kan. Medical School.

BENNETT, JUDITH A., Instr.; Asst. Dir., Center for Student Development (1982). PhD 1983, Kan. St. Univ.

BIRNBAUM, ROGER D., Hospital Admin., Student Health Center (1976). BA 1970, Southwestern St. Okla.

BLANKINSHIP, DAVID A., Instr., Center for Student Development (1983). MA 1977, Pittsburg St. Univ.

BLANKINSHIP, JILL S., Hall Director, Housing (1982). BS 1976, Pittsburg St. Univ.

BOCKLAGE, NANCY A., Asst. Instr., Housing (1983). BA 1983, Northeast Mo. St. Univ.

BOSCO, PAT J., Asst. Dean of Students; Asst. to Vice Pres. for Student Affairs (1971). BS 1971, MS 1973, Kan. St. Univ.; PhD 1982, Univ. of Neb.

BOSOMWORTH, JANET C., Asst. Instr., Center for Student Development (1983). BA 1982, Kan. St. Univ.

BRETTELL, J. ALLAN, Foreign Student Advisor; Asst. Prof., Center for Student Development (1966). BA 1949, MS 1951, Westminster Col.

BROWN, PATRICIA S., Instr., Center for Student Development (1982). MA 1979, Kan. St. Univ.

BURKE, LUCINDA C., Instr., Lafene Student Health Center (1981). MS 1981, Kan. St. Univ.

BUTLER, ANNE S., Dir., Educational Supportive Services, Office of Minority Affairs (1979). BA 1970, E. Kentucky Univ.; MA 1979, Kan. St. Univ.

COLEMAN, THOMAS, Asst. Prof.; Dir., Mental Health (1980). BS 1971, PhD 1976, Brigham Young Univ.

COLLINS, MONICA M., Instr., Center for Student Development (1979). BA 1978, Kan. St. Univ.

CONNAUGHTON, JACK, Asst. Dir., K-State Union (1980). BS 1968, MS 1971, Univ. of Wis.-LaCrosse.

COWAN, ORA A., Instr., Housing (1983). MA 1980, Kan. St. Univ.

CULVER, CINDY, Instr.; Health Educator, Student Health Center (1981). BSN 1978, Univ. of Va.; MS 1981, Kan. St. Univ.

DANSKIN, DAVID G., Prof.; Counseling Psychologist, Center for Student Development (1959). AB 1950, Univ. of Redlands; MA 1951, PhD 1954, Ohio St. Univ. (GF)

DAVIS, DONNA J., Asst. Foreign Student Advisor; Instructor, Center for Student Development (1981). BS 1971, MS 1974, Kan. St. Univ.

DIXON, LAWRENCE, Instr., Center for Student Development (1983) PhD 1981, Kan. St. Univ.

ECKLUND, ROBERT D., Staff Physician; Assoc. Prof., Lafene Student Health Center (1979). BS 1970, Va. Polytechnic Inst.; MD 1974, Medical Col. of Va.

EDWARDS, A. THORNTON, Dir. Emeritus, Housing (1945). BS 1941, MS 1946, Kan. St. Univ.

EDWARDS, MARK D., Asst. Instr., Housing (1983). BA 1982, Univ. of Ark.

ELLIOTT, DENNIS R., Phys. Asst.; Instr., Lafene Student Health Center (1981). BS 1977, Wichita St. Univ.; Phys. Asst. Program, 1977, Wichita St. Univ.

ENDER, STEVEN C., Asst. Prof.; Counselor, Center for Student Development (1982). BS 1972, Va. Commonwealth Univ.; MEd 1974, EdD 1981, Univ. of Ga.

FELDE, ROBERT A., Asst. Dir. Small Halls, Housing (1979). MSE 1974, Univ. of Wis., LaCrosse; BA 1972, Luther. Col., Decorah, Ia.

FRANKAMP, KATHY, Asst. Dir., Housing (1983).

FRITH, THOMAS J., Assoc. Prof.; Dir., Housing (1965). BA 1960, MA 1963, EdS 1965, Univ. of Iowa.

FUSSELL, RUBYE E., Hall Director, Housing (1982). BS 1965, Fort Valley St. Col.

GLOVER, TINA R., Asst. Instr., Off-Campus Housing (1982). BA 1980, Kan. St. Univ.

GREENE, KATHLEEN V., Instr., Educational Supportive Services, Center for Student Development (1981). BA 1968, Ottawa Univ.; BS. Ed, 1971, Univ. of Kan.; MS 1977, Kan. St. Univ.

GUEVARA, RAUL R., Asst. Instr., Center for Student Development (1981). BA 1977, Washburn Univ.

GUNDLACH, CATHERINE P., Asst. Instr., Housing (1983). BA 1976, Kearney St. Col.

HALVERSON, JOYCE A., Asst. Dir.; Free Rec. Coord., Rec. Services (1982). MA 1980, Univ. of Iowa; BA 1976, Univ. of N. Iowa.

HARRIS, MICHAEL R., Asst. Instr., Housing (1982). BA 1981, Tabor Univ.

HAWKINSON, DALE P., Instr., Center for Student Development (1983). MA 1977, Kan. St. Univ.

HOLDEN, GRETCHEN, Instr., Center for Student Development (1982). MA 1968, Rutgers Univ.

INTFEN, SUSAN M., Asst. Instr., Housing (1984). BA 1981, Kan. St. Univ.

JOLLY, SAMONE L., Instr., Center for Student Development (1981). MA 1976, Kan. St. Univ.

LACY, BURRITT S., JR., Psychiatrist, Student Health Center (1964). BA 1941, Harvard Univ.; MD 1944, Cornell Univ.; 1951, American Board of Psychiatry and Neurology.

LAFENE, BENJAMIN WILLIAM, Dir. Emeritus, Student Health Center (1946). BS 1923, Mich. St. Univ.; MD 1931, Western Reserve Univ.

LANGLIEB, KENNETH R., Asst. Instr., Housing (1982). MA 1980, Montclair St. Col.

LAUGHLIN, J. BRUCE, Asst. Prof.; Dir., Career Planning and Placement Center (1962). BS 1950, Univ. of Kan.; MS 1961, Kan. St. Univ.; JD 1967, Washburn Univ.

LEWIS, GARLAND G., Asst. Instr.; Admin. Asst., Housing (1973). BS 1972, Kan. St. Univ.

LISTERMAN, JOHN C., Assoc. Prof., Lafene Student Health Center (1983). MD 1974, Univ. of Mo.

LOUSHINE, SANDRA K., Instr., Housing (1983). MA 1983, Kan. St. Univ.

LOWMAN, KATHLEEN, Asst. Dir., Career Planning and Placement Center (1981). BA 1970, MA 1972, Calif. St. Univ., Northridge.

LUCAS, KATHLERN L., Instr., Center for Student Development (1983). PhD 1975, Jackson St. Univ.

LYNCH, MICHAEL L., Assoc. Prof.; Asst. Dir., Center for Student Development (1972). BS 1967, MS 1968, EdD 1972, Ind. Univ.

MACDONALD, STUART D., Asst. Instr., Housing (1982).

MARTIN, DANIEL C., Assoc. Prof.. Student Health Center (1976). BS 1952, Arkadelphia Univ.; MD 1958, Univ. of Kan.; Fellow, American College of Clinical Pharmacology.

MARTINI, STEVE, Asst. Dir.; Intramural Coord., Rec. Services (1980). MA 1977, BA 1974, Calif. St.-Chico.

MAXWELL, JANET L., Instr.; Dietitian, Housing (1977). BS 1973, Purdue Univ.; MS 1981, Kan. St. Univ.

MAYS, LISA M., Asst. Instr., Housing (1982). BA 1981, Kan. St. Univ.

McKNIGHT, DAVID E., Consulting Radiologist, Lafene Student Health Center (1972). DVM 1954, Kan. St. Univ.; MD 1962, Univ. of Kan.

McMANIS, HELEN L., Asst. Dir., Food Service; Dietitian, Housing (1966). BS 1941, MS 1972, Kan. St. Univ.

MOELLER, LARRY D., Assoc. Prof., Lafene Student Health Center (1983). MD 1977, Univ. of Neb.-Omaha.

MOLT, MARY, Instr.; Dietitian. Housing (1973). BS 1971, Kearney St. Col.; MS 1973, Univ. of Okla.

NEWTON, FRED, Assoc. Prof.; Dir., Counseling Center, Center for Student Development (1980). BA 1965, Muskingum Col.-Ohio; MA 1967, Ohio St. Univ.; PhD 1972, Univ. of Mo.-Columbia.

NOLTING, EARL, JR., Assoc. Prof.; Dir., Center for Student Development; Dean of Students (1974). BS 1959, MS 1961, Ind. Univ.; PhD 1967, Univ. of Minn. (GF)

NORDIN, MARGARET N., Assoc. Prof.; Assoc. Dir., Center for Student Development; Coordinator, fenix Program (1957). BS 1941, MA 1953, PhD 1962, Univ. of Minn.

NUWANYAKPA, PATRICIA G., Instr., Center for Student Development (1983). MA 1979, Kan. St. Univ.

OGG, WILLIAM D., Instr., Counseling Center, Center for Student Development (1965). BS 1956, MS 1964, Kan. St. Univ.

OLSEN, CHARLOTTE S., Instr., Center for Student Development (1981). MA 1979, Kan. St. Univ.

PEINE, CAROLINE F., Asst. Dean of Students, Center for Student Development (1961). AB 1947, Carleton Col.; MS 1951, Kan. St. Univ.

PENCE, JOHN T., Asst. Dir., Housing-Food Service; Dietitian, Housing (1963). BS 1963, Purdue Univ.; MS 1970, Kan. St. Univ.

PESCI, PATRICK, Instr.; Dietitian, Housing (1975). BS 1973, Ind. Univ. of Pa.; MS 1981, Kan. St. Univ.

PETERS, CHESTER E., Prof.; Vice Pres. for Student Affairs (1947). BS 1947, MS 1950, Kan. St. Univ.; PhD 1953, Univ. of Wis.

PETERSON, JACK T., Consulting Pathologist, Student Health Center (1965). AB, MD, 1950, Univ. of Kan.

POWELL, SHERYL A., Asst. Instr., Housing (1984). MA 1980, Wash. St. Univ.

PROITE, ROSANNE, Instr., Housing (1983). MA 1979, Western Illinois Univ.

PURDY, NAOMI C., Assoc. Prof., Lafene Student Health Center (1983). MD 1980, Univ. of Colo.

ROBEL, BARBARA K., Greek Affairs Advisor (1974). BA 1965, Kan. St. Univ.

ROBEL, RAYDON H., Dir., Recreational Services (1970). BS 1965, MS 1970, Kan. St. Univ.

ROOF, DONALD B., Instr.; Asst. Dir. Family Housing, Housing (1964). BS 1964, Kan. St. Univ.

ROUTSON, SALLY, Coord. of Student Activities (1978). BA 1973, Wittenberg Univ., Ohio; MEd 1978, Univ. of Ill.

RYAN, THOMAS, Staff Physician; Assoc. Prof., Lafene Student Health Center (1980). BS 1966, Wm. & Mary Col., Virginia; MD 1970, Univ. of Va.

SALDANHA, LEILA, Asst. Instr., Housing (1982). BA 1974, Univ. of Bombay, India.

SANDERS, CORA A., Instr., Center for Student Development (1982). MA 1975, Fort Valley St. Col.

SCHEULE, BARBARA, Asst. Instr., Housing (1981). BA 1980, Univ. of Neb.-Lincoln.

SCHUETTE, CLIFFORD G., Asst. Prof.; Counseling Psychologist, Center for Student Development (1975). AA 1967, Del Mar Comm. Col.; BBA 1969, Univ. of Tex.-Austin; MS 1973, EdD 1975, East Tex. St. Univ.

SEAL, MARY JANE, Instr.; Dietitian, Housing (1977). BS 1976, Wash. St. Univ.; MS 1982, Kan. St. Univ.

SHUGOLL, ROBERT M., Instr., Lafene Student Health Center (1983). MS 1978, American Univ.

SIDEREWICZ, MARY C., Instr., Center for Student Development (1983). MA 1980, Kan. St. Univ.

SILLIMAN, BEN, Instr., Learning Skills Specialist, Center for Student Development (1981). BA 1975, Colo. St. Univ., M. Div., 1978, Princeton Theol. Sem.; MS 1981, Kan. St. Univ.

SILLS, JACK L., Assoc. Dir., K-State Union (1962). AB 1958, Kan. Wesleyan Univ.

SISSON, MALLEY, Food Service Dir., K-State Union (1980). BS 1971, Univ. of Mo.-Columbia.

SMITH, GUY M., Staff Physician; Assoc. Prof., Lafene Student Health Center (1980). MD 1971, Univ. of Va.

SMITH, WALTER D., Dir., K-State Union (1957). BA 1950, Kan. Wesleyan Univ.

SPENCER-CARVER, ELAINE, Instr., Center for Student Development (1983). MA 1979, Univ. of Kan.

STOVER, ENID H., Instr., Center for Student Development (1983). MA 1975, Kan. St. Univ.

SUDERMAN, ARLAN J., Hall Director, Housing (1982). BS 1981, Kan. St. Univ.

SWITZER, VERYL A., Asst. Prof.; Asst. Vice-President for Minority Affairs and Special Programs (1969). BS 1954, MS 1974, Kan. St. Univ.

TOUT, ROBERT C., Dir., Student Health Center (1977). BS 1949, West Tex. St. Univ.; MD 1953, Southwestern Med. School, Univ. of Tex.-Dallas.

TYE, SHARON A., Asst. Instr., Housing (1983). BA 1983, Univ. of Mo.

URBAN, DIANNE K., Instr., Center for Student Development (1983). JD 1983, Washburn Univ.

VANESCHEN, JOHN, Asst. Instr., Housing (1983). BA 1982, Univ. of Iowa.

VERSCHELDEN-MCKENNA, CIA, Hall Director, Housing (1982). MSW 1979, Univ. of Conn.; BS 1976, Kan. St. Univ.

WATKINS, JOHN N., Assoc. Prof., Student Health Center (1978). AB 1948, MD 1952. Univ. of Mich.

WEINACKER, EMILY L., Hall Director, Housing (1982). BA 1982, N.M. St. Univ.

WILSON, MALINDA S., Asst. Instr.; Dietitian, Housing (1982). BS 1982, Kan. St. Univ.

WISEMAN, DENISE, Asst. Instr.; Dietitian, Housing (1980). BS 1977, Kan. St. Univ.

YODER, DAVID D., Hall Director, Housing (1982). BS 1973, Kan. St. Univ.

Intercollegiate Athletics

ADOLPH, CAROL J., Admin. Asst./Ticket Mgr. (1968).

ANTHONY, SALLY, Asst. Basketball Coach, (1981). BS 1977, Austin Peay St. Univ.; MS 1978, Southern Ill. Univ.

BEGNOCHE, BRADLEY M., Trainer (1983). BS 1980, Univ. of Kan.

BOCCHI, DON, Asst. Football Coach (1976). BA 1969, Duquesne Univ.; MS 1970, Univ. of Wis.

BOUMA, CHRISTINE F., Asst. Dir., Office of Sports Information (1983). BA 1983, Univ. of Neb.

BOYCE, JERRY, Asst. Football Coach (1981). BS 1961, MS 1965, Central Mo. Univ.

CAPRIOTTI, JOHN J., Asst. Track Coach (1983). BS 1981, Calif. Polytechnic St. Institute.

COLBERT, CONRAD L., Assoc. Ath. Dir. and Bus. Mgr. (1976). BBA 1960, Univ. of Iowa.

COLE, RANDAL L., Asst. Track Coach (1983). MA 1983, Kan. St. Univ.

CRAMER, CARL, Asst. Trainer (1982). BA 1976, Augsburg Col.; MS 1982, Univ. of Wis.

CURRIE, RALPH, Head Softball Coach (1982).

DICKEY, JAMES H., Head Football Coach (1977). BS 1956, Univ. of Houston.

DRIESBACH, CHARLES R., Asst. Football Coach (1976). BS 1978, Villanova Univ.

EPPS, JAMES, Academic Counselor (1981). BA 1969, Washburn Univ.; MS 1972, Pittsburg St. Univ.

FIJALKOWSKI, HENRY M., Trainer (1981). BS 1981, West Va. Univ.

FRANK, RON, TV Specialist (1980). BA 1972, Fort Hays St. Univ.

HARRIS, HENRY D., Asst. Basketball Coach (1983). BA 1981, Tenn. St. Univ.

HARTMAN, JOHN HOWARD, Head Basketball Coach (1970). BS 1950, MS 1954, Okla. St. Univ.

HENDERSON, KENNETH L., Asst. Baseball Coach (1983). BA 1983, Mo. St. Univ.

HICKEY, BILL G., Head Baseball Coach (1980). MA 1973, Kan. St. Univ.

HICKEY, LYNN A., Head Basketball Coach (1979). BSE 1973, Ouachita Baptist Univ.

HOLMES, JEROME, Asst. Basketball Coach (1983). BA 1971, Bethel Col.

HUOT, KATHLEEN A., Trainer (1983). BA 1983, Iowa St. Univ.

JUSTVIG, HARRY, Asst. Football Coach (1983). BA 1983, Kan. St. Univ.

KADLEC, JOHN A., Asst. Athletic Dir. (1978). BS 1951, MS 1952, Univ. of Mo.-Columbia.

KLEINAU, JAMES, Equip. Mgr. (1979). BS 1977, Okla. St. Univ.

KRAFT, GREG, Asst. Track Coach (1981). BS 1978, Calif. St. Univ.; MS 1981, Calif. St. Univ.-San Luis Obispo.

LATIMORE, MARION L., Asst. Football Coach (1975). BS 1972, Kan. St. Univ.

LEVIN, LILA, Head Women's Golf Coach (1982). BS 1956, Kan. St. Univ.

LINDSEY, ROBERT D., Asst. Football Coach (1982). BA 1981, Kan. St. Univ.

LONG, ROBERT, Asst. Football Coach (1983). MA 1973, Kan. St. Univ.

LOONEY, MICHAEL C., Asst. Television Specialist (1983). AA 1976, Dodge City Community Col.

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McGINNIS, JAMES D., Asst. Football Coach (1983). BA 1973, Texas Christian Univ.

McGUIRE, TIMOTHY M., Asst. Football Coach (1984). MS 1980, Univ. of Neb.

McVAY, TOMMY, Asst. Football Coach (1983). MS 1967, Southeastern Okla. St. Univ.

MERFELD, GREGORY A., Admin. Asst. (1983). BA 1982, Univ. of Iowa.

MILLER, STEVE, Head Track Coach (1981). BS 1965, Bradley Univ.; MS 1978, Calif. Polytechnic St. Univ.

NELSON, SCOTT, Volleyball Coach (1980). BS 1979, Ball St. Univ.; MS 1980, Brigham Young Univ.

OTTO, JAMES E., Asst. Football Coach (1983). BA 1980, Kan. St. Univ.

PRAY, NANCY B., Admin. Asst. (1983). MA 1976, Kan. St. Univ.

RASSETTE, BRIAN, Admin. Asst. (1982). BS 1980, Kan. St. Univ.

RIEDERER, RUSS, Strength & Conditioning Coach (1981). BS 1980, Kan. St. Univ.

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SAMUELSON, JAN, Asst. Track Coach (1982). BS 1978, Bowling Green St. Univ.; MS 1982, Ind. Univ.

SCOTT, MICHAEL, Dir., Office of Sports Information (1982). BS 1976, Kan. St. Univ.

SILL, OWEN W., Trainer (1983). BS 1981, Kan. St. Univ.

TAYLOR, SHERWOOD A., Asst. Football Coach (1984). BS 1980, Univ. of Okla.

TOWERS, DICK, Athletic Dir. (1981), BS 1953, MS 1961, Kan. St. Univ.

WAUTHIER, RAYMOND A., Head Men's Golf Coach (1979). BS 1945, Albion Col.; MS 1954, Drake Univ.

WEBB, STEPHEN W., Head Women's Tennis Coach (1982). BA 1982, Kan. St. Univ.

WINSTON, DARRYL, Asst. Basketball Coach (1982). BS 1977, Kan. St. Univ.; BS 1978, Kan. St. Univ.

WOLEVER, MARTI, Asst. Baseball Coach (1983). BA 1982, Univ. of Neb.

ZICKLER, MARYANN, Asst. Trainer (1981). BS 1973, Tex. Tech. Univ.; MS 1979, Tex. Women's Univ.

Research, Extension, and Outreach

Library Faculty

BIRNEY, ANN, Asst. Prof., Univ. Library (1984). BA 1974, Univ. of Neb.-Omaha; MLS 1977, Emporia St. Univ.

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Computing Facilities

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BALDING, JAMES L., Prof.; Extension Specialist, Formula Feeds Manufacturing (1965). BS 1960, MS 1971, Kan. St. Univ.

BALLOU, RUSSELL S., Instr.; Motion Picture Production, Radio and TV (1973). BS 1971, Kan. St. Univ.

BARNABY, G.A. (ART), JR., Asst. Prof.; Agricultural Economist, Farm Management (1979). BS 1973, Fort Hays St. Univ.; MS 1976, N.M. St.; PhD 1979, Texas A & M.

BARTLETT, CLARENCE E., Instr. Emeritus; Extension Economist, Farm Management (1947). BS 1929, Univ. of Neb.

BARTON, DAVID G., Asst. Prof.; Agricultural Economist, Business Management (1976). BS 1967, Utah St. Univ.; MS 1970, PhD 1974, Purdue Univ.

BATES, CHARLES T., Assoc. Prof.; Extension Specialist, 4-H - Youth Statewide Events and Programs (1956). BS 1951, Okla. A & M; MS 1960, Univ. of Wis.

BAUERNFEIND, ROBERT J., Asst. Prof.; Area Extension Specialist, Entomology (1978). BS 1967, Wis. St. Univ.; MS 1976, PhD 1978, Univ. of Wis.

BEECH, DOUGLAS F., Instr.; Agricultural Economist, EDP System Analyst (1979). BS 1972, MS 1976, Cornell Univ.

BIEBERLY, FRANK G., Prof. Emeritus; Section Leader and Extension Specialist, Crops and Soils (1941). BS 1938, MS 1949, Kan. St. Univ.

BISWELL, CLIFFORD R., Prof.; Asst. St. Extension Forester (1957). BS 1954, MS 1965, Univ. of Mo.

BITTEL, STEVEN G., Asst. Prof.; Area Extension Specialist, Community Resource Development (1973). BA 1969, Fort Hays St. Univ.; MS 1973, Kan. St. Univ.

BLACK, RICHARD D., Assoc. Prof., Extension Irrigation Engineer (1982). BS 1952, MS 1953, PhD 1961, Univ. of Ill.

BLAIR, LARRY M., Instr.; Area Extension Forester (1978). BS 1976, MS 1978, Univ. of Mo.

BLANKENHAGEN, ELMER W., Asst. Prof. Emeritus; Coordinator, Schedules and Reports (1950). BS 1948, Kan. St. Univ.

BLECHA, FRANK O., Prof. Emeritus; District Agricultural Agent (1919). BS 1918, MS 1924, Kan. St. Univ.

BOHANNON, ROBERT A., Prof. Emeritus (1951). BS 1949, Mich. St. Univ.; MS 1951, Kan. St. Univ.; PhD 1957, Univ. of Ill.

BONCZKOWSKI, LARRY C., Instr.; Area Extension Specialist, Crop Protection (1977). BS 1975, MS 1977, Kan. St. Univ.

BONCZKOWSKI, MARY H., Instr.; Extension Accountant (1980). BS 1975, MS 1977, Kan. St. Univ.

BONEWITZ, E. RALPH, Prof. Emeritus; Extension Specialist, Dairy Science (1943). BS 1941, MS 1955, Kan. St. Univ.

BORST, WILLIAM H., Assoc. Prof.; Area Extension Specialist, 4-H and Youth (1953). BS 1950, Kan. St. Univ.; MS 1962, Colo. St. Univ.

BRADSHAW, MICHAEL H., Assoc. Prof.; Extension Specialist, Health and Safety (1978). BS 1968, MS 1971, Brigham Young Univ.; PhD 1978, Kan. St. Univ.

BRANDSBERG, GEORGE T., Asst. Prof.; Asst. Extension Editor, Agricultural Economics (1977). BS 1959, Univ. of S.D.; MS 1967, Iowa St. Univ.

BRATTON, GERALD F., Asst. Prof.; Area Extension Forester (1967). BS 1966, Colo. St. Univ.; MS 1974, Emporia St. Univ.

BRAZLE, FRANK K., Asst. Prof.; Area Extension Specialist, Livestock Production (1976). BS 1970, MS 1976, Kan. St. Univ.

BREEDEN, LOWELL D., Assoc. Prof.; Extension Specialist, Veterinary Medicine (1971). BS, DVM, 1953, Kan. St. Univ.

BRIGGS, VIVIAN B., Asst. Prof. Emerita; Extension Specialist, Family Life (1946). BS 1942, Univ. of Neb.; MS 1952, Kan. St. Univ.

BRILL, MARTHA E., Prof. Emerita; Extension Specialist, Health (1946). BS 1940, Kan. St. Univ.; RN 1940, Univ. of Kan.

BROOKS, H. LEROY, Prof.; Extension Specialist, Insecticides (1965). BS 1960, MS 1963, Univ. of Ark.; PhD 1967, Kan. St. Univ.

BRUCKERHOFF, DAVID N., Instr.; Area Extension Forester (1978). BS 1971, MS 1975, Univ. of Mo.

BUCHANAN, CHRISTINE L., Asst. Prof., Assistant Extension Editor, Publications (1982). BA 1950, Sterling Col.; MA 1974, Kan. St. Univ.

BURKE, JACK M., Prof.; Assoc. St. Leader and Mgr., Radio Station KSAC (1958). BA 1953, ME 1958, N.D. St. Univ.

BURKE, KATHERINE K., Assoc. Prof.; Extension Specialist, Interior Design (1970). BS 1958, MS 1971, Kan. St. Univ.

BURKHART, PEYTON H., Instr. Emeritus, Area Extension Specialist, Soldier Creek Water Quality and Conservation Project (1962). BS 1949, MS 1963, Okla. St. Univ.

BURNS, ERROL G., Asst. Prof. (1984). BS 1963, MS 1967, Brigham Young Univ.

BUSSET, GLENN M., Prof. Emeritus; Asst. Dir., 4-H - Youth Programs (1941). BS 1941, Kan. St. Univ.; MS 1957, Cornell Univ.; PhD 1965, Univ. of Wis. (GF)

CALEY, HOMER K., Prof.; State Leader, Veterinary Medicine (1965). DVM 1952, Kan. St. Univ.

CALL, EDWARD P., Prof.; Extension Specialist, Dairy Science (1980). BS 1951, Ohio St. Univ.; PhD 1967, Kan. St. Univ.

CARLSON, JEAN K., Assoc. Prof.; Extension Specialist, Household Equipment and Management (1950). BS 1950, Kan. St. Univ.; MS 1965, Okla. St. Univ.

CLARKE, MARY P., Asst. Prof.; Extension Specialist, Nutrition Education (1973). BS 1950, Ind. Univ.; MS 1970, Ind. St. Univ.; PhD 1973, Kan. St. Univ.

CLONTS, HALLIE L., Prof. Emerita; Extension Specialist, Programs (1973). BS 1943, Univ. of Mo.; EdM 1964, Boston Univ.; EdD 1972, Ariz. St. Univ.

COLLENTINE, TRACY M., Instr., Extension Specialist, Graphic Arts (1982). BFA 1981, Colo. Univ.

COLLINS, BILL D., Instr.; Area Extension Economist, Farm Management (1954). BS 1951, Kan. St. Univ.; MS 1962, Univ. of Wis.

COOLIDGE, JOHN H., Prof. Emeritus; Extension Economist, Farm Management (1926). BS 1925, MS 1932, Kan. St. Univ.

CORAH, LARRY R., Assoc. Prof.; Extension State Leader, Animal Sciences and Industry Programs (1974). BS 1964, N.D. St. Univ.; MS 1967, Mich. St. Univ.; PhD 1974, Univ. of Wyo.

COX, LAWRENCE J., Prof.; Area Extension Dir. (1952). BS 1948, Okla. St. Univ.; MS 1960, Kan. St. Univ.; EdD 1970, N.C. St. Univ.

CRIST, ROSEMARY A., Asst. Prof. Emeritus; Area Extension Home Economist (1950). BS 1947, Kan. St. Univ.; MA 1967, Univ. of Neb.

CROWE, FREDERICK J., Asst. Prof.; Extension Specialist, Plant Pathology (1978). BS 1971, Stanford Univ.; MS 1975, PhD 1978, Univ. of Calif. (GF)

DALY, MYRNA K., Asst. Prof.; Asst. Extension Editor, Publications (1975). AB 1966, Marquette Univ.; MA 1973, Sangamon St. Univ.

DARLING, DAVID L., Asst. Prof. (1983). BS 1970, MS 1974, Univ. of Mass.; PhD 1983, Ohio Univ.

DAVIS, JEAN C., Asst. Prof. (1983). PhD 1982, Kan. St. Univ.

DAWSON, ROBERT E., Instr.; Area Extension Economist, Farm Management (1976). BS 1973, MS 1974, Kan. St. Univ.

DEXTER, MIRIAM L., Assoc. Prof. Emerita; Asst. Extension Editor, Publications (1944). BS 1926, MS 1933, Kan. St. Univ.

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DICKINSON, ANNABELLE J., Assoc. Prof. Emerita; Assoc. St. Leader, Home Economics (1940). BS 1933, Fort Hays St. Univ.; MS 1954, Univ. of Mo.

DICKSON, WILLIAM M., Instr.; Area Extension Economist, Farm Management (1961). BS 1956, MS 1961, Kan. St. Univ.

DUNHAM, JAMES R., Assoc. Prof.; Extension Specialist, Dairy Science (1969). BS 1959, MS 1967, PhD 1969, Kan. St. Univ.

EBERLE, WILLIAM M., Assoc. Prof.; Extension Specialist, Land Utilization and Planning (1973). BS 1968, Purdue Univ.; MS 1970, PhD 1973, Univ. of Ill.

EDELBLUTE, DALE H., Prof. Emeritus; Area Extension Specialist, Crops and Soils (1947). BS 1934, Kan. St. Univ.

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ERICKSON, DONALD B., Prof.; Asst. Head, Agricultural Economics (1966). BS 1955, MS 1960, Wyo. Univ.; PhD 1964, Purdue Univ.

EVERSON, EVERETT K., Instr., Area Extension Economist, Farm Management (1974). BS 1973, MS 1974, Kan. St. Univ.

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FAUSETT, MARVIN R., Assoc. Prof.; Area Extension Economist (1979). BS 1961, MS 1970, PhD 1979, Univ. of Mo.

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HACKLER, RAYMOND F., Instr.; Area Extension Economist, Farm Management (1960). BS 1952, MS 1966, Okla. St. Univ.

HAGANS, FRANK A., Assoc. Prof. Emeritus; District Agricultural Agent (1930). BS 1925, Kan. St. Univ.

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MALEY, ALVIN E., Lyon County, Emporia (1953). BS 1950, Kan. St. Univ.

MANRY, E. CLIFFORD, Emeritus, Pawnee County, Larned (1940). BS 1940, Okla. St. Univ.

MAXWELL, THOMAS R., Allen County, Iola (1954). BS 1954, MS 1968, Kan. St. Univ.

McCULLY, WILLIAM B., Harper County, Anthony (1959). BS 1954, MS 1959, Okla. St. Univ.

McDANIEL, KAREN A., Wilson County, Fredonia (1975). BS 1975, Southwestern Col.

McGINNESS, KENNETH E., Johnson County, Olathe (1954). BS 1949, Kan. St. Univ.

McMASTER, GERALD O., Emeritus, Brown County, Hiawatha (1951). BS 1940, MS 1951, Kan. St. Univ.

McWILLIAMS, DONALD D., Emeritus, Wallace County, Sharon Springs (1956). BS 1948, Kan. St. Univ.

MEIREIS, CLIFFORD L., Norton County, Norton (1955). BS 1953, Kan. St. Univ.; MEd 1962, Colo. St. Univ.

MENGARELLI, DEBRA R., Elk County, Howard (1981). BS 1979, Kan. St. Univ.

MILLER, RICHARD A., Kiowa County, Greensburg (1983). BS 1982, Lincoln Univ.

NEILL, JOE P., Emeritus, Cloud County, Concordia (1946). BS 1938, Kan. St. Univ.

NELSON, ROSS M., Ellis County, Hays (1957). BS 1957, Kan. St. Univ.

NEUSCHWANDER, OCIE A., Emerita, Greeley County, Tribune (1957). BS 1943, Kan. St. Univ.

NEWCOMER, GLENN A., Bourbon County, Fort Scott (1965). BS 1965, Kan. St. Univ.

NYHART, SYLVESTER, Phillips County, Phillipsburg (1958). BS 1959, MS 1972, Kan. St. Univ.

OLTMANNS, PAUL G., Marshall County, Marysville (1964). BS 1957, Okla. St. Univ.

RIAT, LARRY D., Dickinson County, Abilene (1961). BS 1961, MS 1969, Kan. St. Univ.

ROBERTSON, JOHN F., Emeritus, Comanche County, Coldwater (1956). BS 1950, MS 1967, Okla. St. Univ.

ROHN, NADINE L., Wallace County, Sharon Springs (1977). BS 1977, Kan. Wesleyan.

ROWE, SAMUEL S., JR., Emeritus, Sumner County, Wellington (1965). BS 1940, MS 1952, Univ. of Mo.

SAUERWEIN, CHARLES P., Gray County, Cimarron (1976). BS 1972, Kan. St. Univ.

SCHLESENER, NORMAN E., Kingman County, Kingman (1956). BS 1956, MS 1963, Kan. St. Univ.

SEYFERT, RONALD J., Ottawa County, Minneapolis (1969). BS 1968, Kan. St. Univ.

SMITH, CHARLES W., Cowley County, Winfield (1955). BS 1950, Kan. St. Univ.; MS 1966, Colo. St. Univ.

SMITH, JOHN F., Leavenworth County, Leavenworth (1956). BS 1953, Kan. St. Univ.; MS 1970, Colo. St. Univ.

SMITH, JOSEPH M., Montgomery County, Independence (1967). BS 1967, Okla. St. Univ.

SPARKE, ANN R., Morris County, Council Grove (1977). BS 1977, Kan. St. Univ.

SPENCER, ALBERT E., Pottawatomie County, Westmoreland (1960). BS 1959, Kan. St. Univ.

SPIKER, TERRYL R., Hamilton County, Syracuse (1976). BS 1970, Kan. St. Univ.

SPRINGER, KENTON B., Marion County, Marion (1972). BS 1972, Kan. St. Univ.

STEPHENS, JANET F., Greenwood County, Eureka (1970). BS 1970, Pittsburg St. Univ.; MS 1978, Kan. St. Univ.

STROUD, NELSON E., Emeritus, Geary County, Junction City (1952). BS 1950, MS 1961, Kan. St. Univ.

THOLE, H. THOMAS, Barton County, Great Bend (1965). BS 1965, Okla. St. Univ.

THORSELL, G. CATHERINE, Clark County, Ashland (1968). BS 1968, Kan. St. Univ.

VAN CLEVE, JOSEPH E., Emeritus; Kiowa County, Greensburg (1948). BA 1948, Kan. St. Univ.

VAN METER, EARL L., Douglas County, Lawrence (1960). BS 1958, MS 1968, Kan. St. Univ.

WALKER, MARSHALL F., JR., Grant County, Ulysses (1949). BS 1950, Kan. St. Univ.

WARY, RAYMOND E., JR., Cherokee County, Columbus (1958). BS 1958, Kan. St. Univ.

WHITEHILL, DEAN A., Seward County (1982). BS 1973, MS 1979, Kan. St. Univ.

WILES, DON K., Ford County, Dodge City (1956). BS 1950, Univ. of Neb.; MA 1955, Univ. of Md.

WILLIAMS, H. RODMAN, Morton County, Elkhart (1970). BS 1959, MS 1977, Kan. St. Univ.

WILSON, JACK H., Emeritus, Wichita County, Leoti (1946). BS 1943, MS 1969, Kan. St. Univ.

WILSON, PAUL H., Emeritus, Barton County, Great Bend (1946). BS 1937, Kan. St. Univ.

WOOD, BILLY L., Jewell County, Mankato (1974). BS 1955, MS 1969, Kan. St. Univ.

YOUNG, CAROL H., Edwards County, Kinsley (1966). BS 1966, Emporia St. Univ.; MEd 1971, Wichita St. Univ.

County Extension Agricultural Agents

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BASTIN, DALE L., Edwards County, Kinsley (1980). BS 1980, Kan. St. Univ.

BECK, TIMOTHY J., Wilson County, Fredonia (1983). BS 1982, Penn. St. Univ.

BELSHE, DANA J., Rawlins County (1982). BS 1979, Kan. St. Univ.

BLUME, WILLIS L., Emeritus, Haskell County, Sublette (1948). BS 1942, Tex. A & M.

CHRISTIAN, MICHAEL L., Riley County, Manhattan (1979). BS 1973, Okla. St. Univ.

COX, M. LESTER, Emeritus, Gove County, Gove (1945). BS 1930, Kan. St. Univ.

DAVIDSON, JEFFREY L., Greenwood County, Eureka (1977). BS 1973, MS 1975, Colo. St. Univ.

DUNCAN, STEWART R., Jackson County, Holton (1978). BS 1977, Kan. St. Univ.

EDER, JOEL L., Greeley County (1982). BS 1979, Kan. St. Univ.

EGGLESTON, RONALD A., Cheyenne County, St. Francis (1983). BS 1983, Okla. Panhandle St. Univ.

ERKER, MICHAEL F., Shawnee County, Topeka (1977). BS 1977, Kan. St. Univ.

FIKE, GARY D., Lane County, Dighton (1983). BS 1983, Okla. Panhandle St. Univ.

FRYE, RAYMOND G., Emeritus, Sumner County, Wellington (1943). BS 1930, Kan. St. Univ.

GARRISON, JODY R., Nemaha Co., Seneca (1980). BS 1980, Kan. St. Univ.

GARTEN, CARL H., Saline County, Salina (1978). BS 1976, Kan. St. Univ.

GWIN, PAUL B., Emeritus, Johnson County, Olathe (1934). BS 1932, Kan. St. Univ.

HARTMAN, PAUL D., Pratt County, Pratt (1977). BS 1977, Kan. St. Univ.

HENSON, DARL W., Edwards County, Kinsley (1983). BS 1978, Ft. Hays St. Univ.

KATER, LARRY E., Wichita County, Leoti (1981). BS 1969, Kan. St. Univ.

KUECK, DON L., Reno County, Hutchinson (1966). BS 1966, MS 1969, Kan. St. Univ.

LADD, ALAN J., Brown County (1979). BS 1978, Kan. St. Univ.

LeVALLEY, GERALD E., JR., Sumner County, Wellington (1967). BS 1967, Okla. St. Univ.

MAXWELL, THOMAS M., Trego County, WaKeeney (1981). BS 1978, MS 1980, Kan. St. Univ.

MOORMAN, MITCHELL J., Comanche County (1982). BS 1982, Kan. St. Univ.

MURPHY, BRIAN L., Morris County, Council Grove (1981). BS 1981, Kan. St. Univ.

NELSON, RICKY G., Clark County, Ashland (1980). BS 1980, Panhandle St. Univ.

ORR, BRYCE, Sedgwick County, Wichita (1952). BS 1952, Kan. St. Univ.

OTTE, CHARLES E., Geary County (1982). BS 1979, MS 1981, Univ. of Neb.

PARR, KELLEE R., Elk County, Howard (1984). BS 1978, MS 1984, Kan. St. Univ.

ROBISON, JOHN E., Ness County (1982). AS 1964, Cloud County Comm. Col.; BS 1966, Kan. St. Univ.

ROE, KIRK W., Ellsworth County (1982). BS 1980, MS 1982 Univ. of Neb.

SHOEMAKER, FRANK K., Johnson County (1982). AS, Cloud County Comm. Col.; BS 1982, Kan. St. Univ.

SMITH, DAVID R., Douglas County, Lawrence (1976). BS 1970, Kan. St. Univ.

SNELL, RICHARD C., Doniphan County, Troy (1981). BS 1977, Kan. St. Univ.

STITES, DEAN E., Crawford County (1982). BS 1976, Kan. St. Univ.

STROADE, RICHARD D., Rooks County, Stockton (1959). BS 1959, MS 1971, Kan. St. Univ.

SWAN, FRANK D., Stanton Co., Johnson (1980). BS 1973, West Tex. St. Univ.

THURLOW, LYNNE, Sheridan County, Hoxie (1981). BS 1980, Kan. St. Univ.

VAN SKIKE, KEITH P., Wallace County (1982). Assoc. 1978, Barton Co. Comm. Col.; BS 1980, MS 1982, Kan. St. Univ.

WALDREN, DERYL E., Logan County, Oakley (1981). BS 1980, Kan. St. Univ.

WARNER, JAMES E., Barton County, Great Bend (1980). BS 1973, West Tex. St. Univ.

WESTFAHL, STEVEN A., Sedgwick County, Wichita (1970). BS 1970, Kan. St. Univ.

WILLMAN, TODD L., Sherman County (1982). BS 1982, S.D. St. Univ.

WITHERS, RAYMOND L., Neosho County, Erie (1979). BS 1978, Kan. St. Univ.

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BARNES, HELEN L., Linn County, Mound City (1964). BS 1949, Univ. of Mo.

BASS, LYNDA S., Jewell County, Mankato (1981). BS 1980, Kan. St. Univ.

BAUERLE, CAROL A., Brown County, Hiawatha (1979). BS 1979, Kan. St. Univ.

BERGER, MARY JO, Comanche County, Coldwater (1981). BS 1981, Kan. St. Univ.

BESTHORN, JODI L., Smith County, Smith Center (1980). BS 1978, Sterling Col.

BIEHL, FLORENCE F., Johnson County, Olathe (1962). BS 1951, Kan. St. Univ.

BLACKWILL, CORA A., Emerita, Ottawa County, Minneapolis (1948). BS 1931, Fort Hays St. Univ.

BLEVINS, OLETHA L., Emerita, Douglas County, Lawrence (1959). BS 1939, Iowa St. Univ.

BRANDEN, ELSIE P., Finney County, Garden City (1955). BS 1955, Kan. St. Univ.

BROOKS, BLANCHE, Emerita, Osage County, Lyndon (1941). BS 1925, Kan. St. Univ.

BUSSMAN, DERINDA G., Barton County, Great Bend (1971). BS 1971, Panhandle St. Col.

BYARLAY, DEBRA L., Marion County, Marion (1976). BS 1976, Kan. St. Univ.

CARR, LINDA L., Montgomery County, Independence (1963). BS 1962, MS 1978, Kan. St. Univ.

CHESTNUT, BIBIANA M., Barber County, Medicine Lodge (1980). BS 1978, Penn. St. Univ.

CLINE, DIANN W., Saline County, Salina (1974). BS 1972, Emporia St. Univ.

CLINE, LUCILLE G., Emerita, Pawnee County, Larned (1951). BS 1948, Kan. St. Univ.

COFFMAN, CRYSTAL R., Harper County, Anthony (1972). BS 1971, Kan. St. Univ.

CONLEY, JOSEPHINE, Emerita, Johnson County, Olathe (1955). BS 1933, Okla. St. Univ.

COVERDILL, MABEL, Emerita, Scott County, Scott City (1946). BS 1926, Emporia St. Univ.; MS 1941, Univ. of Wis.

CRESS, JEANICE A., Allen County, Iola (1956). BS 1956, Kan. St. Univ.

CURRIE, TRELLA R., Emerita, Cloud County, Concordia (1955). BS 1932, Pittsburg St. Univ.

DAVIS, BRENDA K., Bourbon County, Fort Scott (1982). BS 1982, Kan. St. Univ.

DAVIS, OLIVE L., Emerita, Morton County, Elkhart (1960). BS 1937, Northwestern St. Col., Okla.

DAWSON, CONNIE S., Kiowa County, Greensburg (1972). BS 1972, Kan. St. Univ.

DAWSON, RITA T., Coffey County, Burlington (1971). BS 1971, Kan. St. Univ.

DIEHL, JANICE C., Wyandotte County, Kansas City (1983). MS 1982, Colo. St. Univ.

DROGE, BEVERLY F., Decatur County, Oberlin (1982). BS 1976, Kan. St. Univ.

DUNNING, BEVERLY K., Sedgwick County, Wichita (1964). BS 1963, Kan. St. Univ.; MS 1970, Wichita St. Univ.

EASDON, PAULA S., Morton County, Elkhart (1981). BS 1981, Kan. St. Univ.

ENGLAND, NAOMI A., Sedgwick County, Wichita (1976). BS 1960, Central Okla. St. Col.; MS 1968, Kan. St. Univ.

FELTS, GLENNA M., Douglas County, Lawrence (1979). BA 1953, Ottawa Univ.

FICKEN, WILLA L., Emerita, Grant County, Ulysses (1957). BS 1930, Kan. St. Univ.

FILLINGSNESS, DOROTHY H., Chase County, Cottonwood Falls (1980). BS 1978, S.D. St. Univ.

FISHER-ROTMAN, MARY, Ellis County, Hays (1981). BS 1977, Kan. St. Univ.

FOWLER, JOYCE M., Wilson County, Fredonia (1983). BS 1983, Univ. of Neb.-Lincoln.

FOWLER, RUTH E., Lyon County, Emporia (1980). BS 1963, Emporia St. Univ.

FREDENBURG, NEOSHO L., Emerita, Morris County, Council Grove (1953). BS 1925, Kan. St. Univ.

FREY, ALICE L., Grant County, Ulysses (1955). BS 1955, MS 1968, Kan. St. Univ.

FULTON, LORI B., Rice County, Lyons (1981). BS 1981, Kan. St. Univ.

GASTON, GLORIA J., Marshall County, Marysville (1960). BS 1960, Kan. St. Univ.

GATLIN, DOROTHY JO, Greeley County, Tribune (1981). BS 1981, Kan. St. Univ.

GIBBS, MARY LOU, Pottawatomie County, Westmoreland (1972). BS 1952, Kan. St. Univ.

GILES, ALMA H., Emerita, Linn County, Mound City (1917). BS 1914, MS 1946, Kan. St. Univ.

GLENN, MARILYN S., Kingman County, Kingman (1971). BS 1968, Kan. St. Univ.

GOETTEL, EVON W., Cherokee County, Columbus (1969). BS 1965, MS 1978, Kan. St. Univ.

GOMEZ, MARGARET A., Cowley County, Winfield (1977). BS 1967, Kan. St. Univ.

GRABER, VIVIAN E., Emerita, Kingman County, Kingman (1955). BS 1943, Fort Hays St. Univ.

GRIFFIN, KITTY C., Haskell County, Sublette (1979). BS 1978, S.D. St. Univ.

GUERRERO, JANICE B., Stevens County, Hugoton (1972). BS 1963, Colo. St. Univ.; MS 1976, Kan. St. Univ.

HAYES, MARY M., Emerita, Smith County, Smith Center (1962). BS 1939, Kan. St. Univ.

HEINLY, KAYANN, Riley County, Manhattan (1957). BS 1952, Midwestern Univ.; MS 1967, Kan. St. Univ.

HELBERT, SUSAN E., Leavenworth County, Leavenworth (1983). BS 1977, MS 1981, Kan. St. Univ.

HELMUTH, DIANE S., Douglas County, Lawrence (1978). BS 1973, McPherson Col.; MS 1977, Southwest Okla. St. Univ.

HENDRICKS, PATRICIA A., Wyandotte County, Kansas City (1983). BS 1958, MS 1981, Univ. of Neb.-Lincoln.

HISS, DEANN M., Woodson County, Yates Center (1981). BS 1981, Kan. St. Univ.

HODGES, R. JEAN, Sedgwick County, Wichita (1964). BS 1947, Kan. St. Univ.; MS 1970, Wichita St. Univ.

HOVE, GERTRUDE, Emerita, Cherokee County, Columbus (1934). BS 1931, Okla. St. Univ.

HOWERTON, PHYLLIS Y., Reno County, Hutchinson (1966). BA 1963, Southwestern Col.

HUFF, RUTH K., Emerita, Pawnee County, Larned (1930). BS 1919, Kan. St. Univ.

JACKSON, CAROLYN W., Harvey County, Newton (1975). BS 1975, Kan. St. Univ.

JOENS, SHARON P., Stafford County, St. John (1983). BS 1977, Iowa St. Univ.

JOHNSON, JUANITA B., Crawford County, Girard (1948). BS 1945, Kan. St. Univ.

KENT, NANCY JO, Ford County, Dodge City (1959). BS 1959, Fort Hays St. Univ.

KINDLER, BEVERLY L., Norton County, Norton (1952). BS 1952, Kan. St. Univ.; MA 1967, Mich. St. Univ.

KOHN, DEBRA D., Logan County, Oakley (1977). BS 1976, Fort Hays St. Univ.

KRUMM, SUSAN J., Republic County, Belleville (1977). BS 1977, Kan. St. Univ.

KRUMSICK, MARY E., Emerita, Shawnee County, Topeka (1938). BS 1931, Kan. St. Univ.

LEACH, GLINDA B., Shawnee County, Topeka (1967). BS 1950, Southeast Mo. St. Col.; MS 1961, MEd 1966, Univ. of Mo.

LOFLIN, SHIRLEY R., Gray County (1982). BS 1980, Fort Hays St. Univ.

LUPFER, KATHRYN L., Lincoln County, Lincoln (1977). BA 1976, Sterling Col.

MAGES, MARCIA L., Franklin County, Ottawa (1976). BS 1976, Emporia St. Univ.; MS 1982, Kan. St. Univ.

MAGGARD, MARGARET H., Butler County, El Dorado (1963). BS 1963, Kan. St. Univ.

MAHONEY, SHERRIE M., Saline County, Salina (1980). BS 1972, N.W. Mo. St. Univ.; MS 1978, Univ. of Mo.

MANSFIELD, EVA P., Emerita, Leavenworth County, Leavenworth (1953). BS 1940, Univ. of Ga.

MANTZ, HELEN M., Emerita, Smith County, Smith Center (1942). BS 1942, Kan. St. Univ.

MARK, EMILY R., Leavenworth County, Leavenworth (1964). BS 1965, MS 1981, Sterling Col.

McCAULEY, EULA MAY, Emerita, Doniphan County, Troy (1930). BS 1927, Northeast Mo. Teachers Col.; MS 1940, Kan. St. Univ.

MEEK, MARY E., Emerita, Geary County, Junction City (1953). BS 1924, Emporia St. Univ.; MS 1938, Kan. St. Univ.

MERRIMAN, SCHARON V., Reno County, Hutchinson (1971). BS 1970, MS 1977, Kan. St. Univ.

MILLER, JACQUE L., Shawnee County, Topeka (1982). BS 1976, Friends Univ.; MS 1982, Emporia St. Univ.

MITCHELL, MARY L., Saline County, Salina (1970). BS 1970, Fort Hays St. Univ.

MOLZEN, SHARON B., Harvey County, Newton (1969). BS 1969, Kan. St. Univ.

MORRICAL, CARLA M., Trego County, WaKeeney (1983). BS 1982, Kan. St. Univ.

MURPHY, KAREN S., Osborne County, Osborne (1975). BS 1974, Kan. St. Univ.

NEASE, LINDA J., Sumner County, Wellington (1976). BS 1972, Kan. St. Univ.; MEd 1975, Penn. St. Univ.

NEELY, ERMA M., Emerita, Trego County, WaKeeney (1950). BS 1942, Kan. St. Univ.

O'FLYNN, DEBORAH L., Sedgwick County, Wichita (1980). BS 1978, Kan. St. Univ.

OLEN, ALICE M., Emerita, Seward County, Liberal (1956). BS 1926, Okla. St. Univ.; MS 1932, Iowa St. Univ.

OVERLEY, VICKY I., Phillips County, Phillipsburg (1979). BS 1966, Fort Hays St. Univ.

PACHTA, BERNADETTE J., Atchison County, Effingham (1980). BS 1980, Kan. St. Univ.

PALMER, RACHEL F., Emerita, Sedgwick County, Wichita (1941). BS 1941, Kan. St. Univ.

PASCHAL, JOANN A., Russell County, Russell (1976). BS 1976, Kan. St. Univ.

PEARSON, GLENDA N., Washington County, Washington (1965). BS 1965, Kan. St. Univ.

PETRACEK, MARIAN H., Emerita, Barton County, Great Bend (1953). BS 1928, Kan. St. Univ.

PETTIJOHN, LINDA K., Wabaunsee County, Alma (1971). BS 1965, MS 1969, Kan. St. Univ.

PHILLIPS, MARGARET E., Jefferson County (1982). BS 1972, MS 1978, Kan. St. Univ.

PRICE, MARJORIE E., Emerita, Coffey County, Burlington (1957). BS 1931, Kan. St. Univ.

QUIRING, SUSAN M., Johnson County, Olathe (1972). BS 1973, Ottawa Univ.; MS 1977, Kan. St. Univ.

REDIKER, JANET B., Lyon County, Emporia (1966). BS 1958, Emporia St. Univ.; MS 1981, Kan. St. Univ.

REIST, DEANNA K., Clay County, Clay Center (1974). BS 1974, Kan. St. Univ.

RICHMOND, MARY F., Osage County, Lyndon (1975). BS 1973, Pittsburg St. Univ.

ROBINSON, ELSIE C., Emerita, Decatur County, Oberlin (1969). BS 1942, Fort Hays St. Univ.

ROWLAND, JEAN R., Labette County, Altamont (1974). BS 1974, Kan. St. Univ.

SCHRANDT, MARY M., Mitchell County, Beloit (1976). BS 1976, Iowa St. Univ.

SCHUMACKER, CLORIS K., Scott County, Scott City (1981). BS 1980, S.D. St. Univ.

SCHUSTER, NANCY D., Anderson County, Garnett (1972). BS 1972, Fort Hays St. Univ.

SHAFFER, TERESA A., Sedgwick County (1982). BS 1971, MS 1973, Kan. St. Univ.

SHIELDS, SANDRA A., Ottawa County, Minneapolis (1965). BS 1965, Kan. St. Univ.

SHOEMAKER, LORI L., Atchison County, Effingham (1983). BS 1983, Kan. St. Univ.

SINIARD, JOYCE P., Stanton County, Johnson (1971). BS 1971, Southwest Mo. St.

SMITH, MABEL R., Emerita, Rice County, Lyons (1929). BS 1926, Kan. St. Univ.

STEFFENS, PATRICIA E., Crawford County, Girard (1971). BS 1958, Univ. of Okla.; MEd 1962, Pittsburg St. Univ.

STUBBS, LUCILLE, Emerita, Smith County, Smith Center (1955). BS 1923, Simpson Col.

SWART, SANDRA K., Wichita County, Leoti (1983). BS 1973, Ft. Hays St. Univ.

SWENSON, SHELLEY C., Cloud County, Concordia (1975). BS 1974, S.D. St. Univ.

SWISHER, MARY T., Rush County, LaCrosse (1970). BS 1970, Kan. St. Univ.

TANNEHILL, LINDA K., Sherman County, Goodland (1983). BS 1982, Kan. St. Univ.

THODEN, NADA F., Miami County, Paola (1965). BS 1965, Colo. St. Univ.

TONN, STEVEN R., Marion County, Marion (1973). BS 1973, MS 1981, Kan. St. Univ.

TOOT, JANICE C., Seward County, Liberal (1966). BS 1966, Kan. St. Univ.

TREXLER, KIMBERLY A., Graham County, Hill City (1979). BS 1977, Fort Hays St. Univ.

TRUAX, RUBY C., Emerita, Sedgwick County, Wichita (1959). BS 1936, Kan. St. Univ.

TUCKER, DIANN G., Thomas County, Colby (1981). BS 1980, Kan. St. Univ.

VIOLA, L. ANN, Shawnee County, Topeka (1974). BS 1969, Kan. St. Univ.

VOET, MARY K., Doniphan County, Troy (1980). BS 1980, Kan. St. Univ.

WALTER, LINDA K., Hodgeman County, Jetmore (1979). BS 1979, Kan. St. Univ.

WARNER, STACEY J., Pawnee County, Larned (1976). BS 1976, Kan. St. Univ.

WATTS, REBECCA A., Hamilton County, Syracuse (1979). BS 1976, Kan. St. Univ.

WATTS, TRANDA W., Gove County, Gove (1972). BS 1972, Fort Hays St. Univ.

WEAVER, MAE K., Barton County, Great Bend (1952). BS 1949, Kan. St. Univ.

WEAVER, MARSHA K., Dickinson County, Abilene (1976). BS 1972, MS 1975, Kan. St. Univ.

WELCH, DORIS M., Kearny County, Lakin (1976). BS 1967, Jacksonville St. Univ.

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WONER, ELIZABETH, Emerita, Harper County, Anthony (1950). BS 1930, Southwestern Col.

YEAGER, DOROTHY F., Chase County, Cottonwood Falls (1980). BS 1978, S.D. St. Univ.

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BOWMAN, SHELLY A., Ford County (1982). BS 1981, Kan. St. Univ.

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CLAWSON, ELDON L., Shawnee County, Topeka (1965). BS 1965, Kan. St. Univ.

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DeWERFF, DONALD M., Rice County, Lyons (1977). BS 1976, Kan. St. Univ.

EWING, MARLENE K., Shawnee County, Topeka (1978). BS 1978, Kan. St. Univ.

FENGEL, JANIS M., Harvey County, Newton (1978). BS 1978, Kan. St. Univ.

FINK, CAROL J., Pottawatomie County, Westmoreland (1980). BS 1977, Kan. St. Univ.

FULTZ, WILLIAM E., Sedgwick County, Wichita (1962). BS 1961, Kan. St. Univ.; MEd 1964, Wichita St. Univ.

GAINS, SHEILA, Wyandotte County (1982). BS 1981, Colo. St. Univ.

GLASER, BONNIE M., Kingman County, Kingman (1981). BS 1981, Kan. St. Univ.

GOLDEN, JANET L., Finney County (1982). BS 1981, Kan. St. Univ.

HAMMERLUND, JANICE M., Geary County, Junction City (1983). BS 1983, Kan. St. Univ.

HOWARD, PATRICIA A., Grant County, Ulysses (1980). BS 1978, Tex. A & M

HUNTER, KAY E., Leavenworth County, Leavenworth (1984). BS 1983, Kan. St. Univ.

KEHLER, DAVID F., Butler County, El Dorado (1976). BS 1975, Kan. St. Univ.

KREISEL, PHYLLIS M., Cherokee County, Columbus (1981). BS 1979, Univ. of Neb.

LANHAM, K. EUGENE, Wyandotte County, Kansas City (1971). BS 1970, Kan. St. Univ.

LEWIS, JANENE, McPherson County, McPherson (1983). BS 1977, Kan. St. Univ.; MS 1982, Brigham Young Univ.

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MADDUX, MICHELLE M., Dickinson County, Abilene (1983). BS 1983, Kan. St. Univ.

MATILE, LYNNE L., Johnson County, Olathe (1978). BS 1978, Emporia St. Univ.

McCOLM, MICHELE K., Linn County, Mound City (1980). BS 1979, Kan. St. Univ.

MORGAN, PENNY S., Crawford County, Girard (1983). BS 1982, Kan. St. Univ.

OTTE, ERIC T., Sedgwick County (1982). BS 1969, MS 1975, Univ. of Neb.

POPKEN, KATHLEEN E., Russell County, Russell (1981). BS 1981, Univ. of Neb.

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RICHARDSON, LINDY L., Douglas County, Lawrence (1973). BS 1973, Kan. St. Univ.

ROGERS, MARY R., Cowley County, Winfield (1984). BS 1983, Univ. of Neb.

SIEMENS, CYNTHIA R., Miami County, Paola (1980). BS 1979, Kan. St. Univ.

SMITH, JENELL M., Sedgwick County, Wichita (1971). BS 1971, Kan. St. Univ.

SWISHER, BRIAN A., Montgomery County, Independence (1976). BS 1975, Kan. St. Univ.

VANHORN, PAMELA I., Saline County, Salina (1983). BS 1982, Kan. St. Univ.

VAN SKIKE, WILLIAM V., Barton County, Great Bend (1950). BS 1950, Kan. St. Univ.; MEd 1965, Colo. St. Univ.

County Extension Horticultural Agents

DAVIDSON, JEFFREY L., Greenwood County, Eurkea (1977). MS 1975, Colo. St. Univ.

DAVIS, GREGORY L., Saline County, Salina (1980). BS 1979, Kan. St. Univ.

MANNELL, TERRENCE L., Ellis County, Hays (1978). BS 1973, Kan. St. Univ.; MS 1977, Ohio St. Univ.

MAYER, STEVEN L., Harvey County, Newton (1980). BS 1977, MS 1979, Univ. of Wis.

MORRIS, MAX B., Sedgwick County, Wichita (1965). BS 1959, Kan. St. Univ.

NEIER, ROBERT I., Reno County, Hutchinson (1979). BS 1979, Kan. St. Univ.

PATTON, DENNIS L., McPherson County, McPherson (1983). BS 1982, Kan. St. Univ.

SELL, PHILIP L., Shawnee County, Topeka (1978). BS 1970, MS 1971, Kan. St. Univ.

STOUSE, LAWRENCE D., Johnson County, Olathe (1966). BS 1963, Kan. St. Univ.

TITTEL, RONALD L., Butler County, El Dorado (1972). BS 1972, MS 1981, Kan. St. Univ.

WARMINSKI, NORMAN C., Sedgwick County, Wichita (1968). BS 1964, Okla. St. Univ.; MS 1968, Texas A & M.

Division of Continuing Education

ACER, JAMES, Instr. (temporary) (1979). AA 1972, Staten IL Comm. Col.; BS 1976, St. Univ. of N.Y.; MS 1980, Kan. St. Univ.

AUBRECHT, JUDITH, Asst. Prof. (1979). BA 1965, Douglass Col.; MA 1974, PhD 1976, Univ. of Ore.

CASHIN, WILLIAM E., Assoc. Prof. (1975). BA 1958, MA 1961, PhD 1969, Catholic Univ. of America.

COATES, JULIE T., Instr. (temporary) (1979). BA 1976, N.C. St. Univ.

ENDER, BARBARA, Instr. (temporary) (1983). MS 1975, Univ. of Akron, Ohio.

FLAHERTY, ROBERTA D., Dir. Instr. (1970). BEd 1970, Washburn Univ. of Topeka; MS 1975, Kan. St. Univ.

GORSKY, EDWIN L., Instr. (temporary) (1981). BA 1964, Kan. Wesleyan; MA 1972, Univ. of Kan.

HURLEY, JANET L., Instr. (temporary) (1979). BS 1970, Miami Univ., Ohio; MS 1980, Kan. St. Univ.

KELLER, KAREN B., Instr. (temporary) (1978). BS 1976, MS 1978, Kan. St. Univ.

KING, DOUGLAS W., Instr.; Dir. of Administrative Systems (1977). BS 1969, Kan. St. Univ.

KRAHN NICKEL, M. JEAN, Asst. Instr. (temporary) (1982).

KRUH, JANET J., Instr. (1977). BA 1948, MA 1949, Wash. Univ., St. Louis.

LARRABEE, MARGARET A., Instr. (temporary) (1981). BSE 1967, Emporia St. Univ.

LARSON, JAMES P., Instr. (temporary) (1983). MA 1983, Mankato State.

LINDSEY, LAVERNE B., Asst. Provost for Con. Ed./Prof. (1983). EdD 1974, Miss. St. Univ.

LOCKHART, WILLIAM E., Asst. Prof. (1969). BS 1956, Pittsburg St. Univ.; MA 1960, Ariz. St. Univ.; PhD 1972, Kan. St. Univ.

MAES, SUE C., Instr. (1969). BS 1969, MS 1973, Kan. St. Univ.

NOGY, CAROL A., Instr. (temporary) (1983). PhD 1975, Mich. St. Univ.

NOMA, AKIHIRO, Asst. Instr. (temporary) (1981). BA 1974, Kagoshima Univ., Japan.

PANKRATZ, LARRY W., Instr. (temporary) (1983). BS 1979, Kan. St. Univ.

PITTLE, JOSEPH T., Instr. (temporary) (1982). BA 1982, Univ. of Fla.

POLSON, CHERYL J., Instr. (temporary) (1981). AA 1974, Hutchinson Com. Jr. Col.; BS 1976, MS 1978, Kan. St. Univ.

SCHANKER, NEIL, Instr. (temporary) (1980). BS 1978, Kan. St. Univ.

SHELLEY, RITA L., Instr. (temporary) (1983). BA 1978, Kan. St. Univ.

SINN, MELINDA L., Instr. (temporary) (1981). AA 1978, Coffeyville Com. Col.; BS 1980, Kan. St. Univ.

SMITH, CAROL A., Instr. (temporary) (1973). BS 1967, Univ. of Mo.

STANLEY, RUTH A., Instr. (1978). BS 1970, N.W. Okla. St. Univ.; MS 1978, Kan. St. Univ.

TRENT, CYNTHIA, Instr. (temporary) (1983). MEd 1981, N.C. St. Univ.

VALLANCE, ELIZABETH J., Dir. Asst. Prof. (1977). BA 1968, Univ. of Mich.; MA 1973, PhD 1975, Stanford Univ. (GF)

WHERRY, MARGARET, Instr. (temporary) (1981). BA 1972, Univ. of Northern Iowa; MA 1974, Kan. St. Univ.

WILHELM, BEVERLY, Asst. Instr. (temporary) (1979). AA 1953, Cottey Jr. Col., Nevada, MO.

WISCHROPP, THEODORE W., Dir., Instr. (temporary) (1979). BS 1958, MS 1962, Emporia St. Univ.

Academic Policies and Procedures

Admission

Richard N. Elkins, director of admissions
118 Anderson Hall
532-6250

Undergraduate students interested in attending Kansas State University should write to the Office of Admissions for an application form. The student should complete the form and return it to the Office of Admissions. All correspondence about admission should be addressed to this office.

Admissions advising

The admissions office is open weekdays from 8:00 a.m. to 11:50 a.m. and from 1:00 p.m. to 5:00 p.m. during the academic year for admissions advising. Campus offices are closed Saturdays and Sundays.

Students and parents are always welcome and are encouraged to visit the campus for individual advising. However, it is advisable to write two weeks in advance for an appointment. Normally several advisors are available for consultation concerning educational plans.

The admissions office is in the center of the main administration building, Anderson Hall.

Several types of campus tours are available on an individual, appointment basis from 9:30 to 11:30 a.m. and 1:30 to 3:30 p.m. each weekday. Please call the Office of Admissions, 913/532-6250, for more information.

High school graduates

Admission to Kansas State University is granted to any individual who has graduated from an accredited Kansas high school. Applicants with previous college credit, earned after graduation from high school, must apply as transfer students. Out-of-state applicants are expected to have a strong academic rank in class and good scores on the American College Test battery.

No academically qualified applicant will be denied admission to the University on the basis of race, color, sex, religion, or national origin. English is the language of instruction at Kansas State University. All undergraduate students whose first language is not English must show proficiency in English before being admitted.

Specific admission procedures are given to students at the time they inquire about admission. Students should apply early in the senior year of high school.

Fraudulent applications

Individuals who provide fraudulent information on applications for undergraduate admissions or readmissions are subject to immediate dismissal from the University. The decision for immediate dismissal will be made by the director of admissions. This decision will be made after a complete and thorough review of the situation and individual conference with the student involved.

The individual dismissed has the right to appeal the decision to the Admissions and Enrollment Committee, whose decision will be final.

High school prerequisites

Entering freshmen should have completed the high school mathematics courses which are a necessary prerequisite for their curriculum as listed below. The capital letters correspond to the section on undergraduate degrees later in this catalog.

(A) One unit of algebra, or one unit of geometry, or a unit involving the combination of these, or approved substitute.
(B) One unit of algebra.
(C) Two units of algebra.
(D) Two units of algebra or one unit of algebra and one unit of geometry, or approved substitute for home economics.
(E) One and one-half units of algebra and one unit of geometry.
(F) Two units of algebra, one unit of geometry, and one-half unit of trigonometry.

The Kansas Board of Regents recommends that a Kansas Regents university preparatory curriculum include the following fifteen units:

4 units of English
3 units of mathematics
3 units of social studies
3 units of natural sciences
2 units of foreign languages

It is further recommended that each of these academic areas consist of the following subject matter content:

English
Four units of composition and grammar, including one unit of literature and one unit of oral expression.

Mathematics
Two units of algebra and the remaining unit consisting of one-half unit of geometry and one-half unit of trigonometry with the objective of preparing students for entry-level calculus.

Social studies
One unit of American history, one-half unit of government, one-half unit of economics, and one additional social science course.

Natural sciences
Any combination of two of the three natural sciences (biology, chemistry, physics) which adds to three units or one unit each of biology, chemistry, and physics.

Foreign languages
Two units of one foreign language or one unit each of two foreign languages.

Transfer students

Transfer students (those with previous college credit) are expected to have at least a 2.0 (C) average in previous academic work to be considered for admission to the University. This applies to Kansas and out-of-state transfer students.

Most credits from accredited junior and senior colleges and universities are transferable to KSU. Information about institutions previously attended and official transcripts must be furnished regardless of the applicant's wishes concerning advanced standing. Failure to provide either will disqualify the applicant. To be official, transcripts must be sent directly from the appropriate school to the KSU Office of Admissions. Hand-carried transcripts and transcripts sent by students are unof-

ficial even though they may carry the college seal or signatures that are placed on official records. Only one-half of the hours required for a KSU degree can be taken at a two-year college.

Transfer students should apply for admission approximately two months prior to the term they wish to enter.

Admission of undergraduate international applicants

For purposes of admission, international applicants are defined as all persons who are not citizens of the United States.

University regulations require that international students and their dependents (if they are with the student) purchase or be in possession of a medical insurance policy or equivalent coverage. Medical insurance can be purchased on the campus or from other independent agencies.

In most cases, international applicants seeking admission to Kansas State University must meet the same academic standards for admission as those required of native students. There are wide variations, however, between educational systems throughout the world that make exact comparisons of educational standards difficult.

International applicants are selected on the basis of their prior academic work, English proficiency, probability of success in the chosen curriculum (as evidenced by prior work in the academic area involved) and certification of adequate financial resources.

In addition to submitting copies of secondary school records and, when applicable, college transcripts, international students must also submit scores from the Test of English as a Foreign Language (TOEFL). TOEFL scores are required of international students who:

1. Have completed their secondary education in a country where English is not the native language,

2. Have completed fewer than two years study in a United States high school,

3. Have completed fewer than two years (60 semester hours) of training in an accredited United States college or university.

A minimum score of 550 on the TOEFL is required for admission. Proficiency also may be demonstrated by passing a full academic year of college-level freshman English (i.e. equivalent to ENGL 100 and ENGL 200) with a grade of C or better at an accredited institution of higher education in the United States.

All undergraduate students (including transfer students) whose first language is not English are required to take the Written Proficiency Test and the Spoken Proficiency Test prior to enrollment. These tests are conducted during the registration period at the beginning of each semester. The purpose of the tests is to identify students who may need help in increasing their English proficiency so that they can realistically profit from their academic pursuits at Kansas State University. Students who do not pass the proficiency tests are required to enroll in and satisfactorily complete ENGL 075, SPCH 065, or both.

Students studying in the United States must submit required admissions materials and credentials to the Office of Admissions at least three months prior to the beginning of the semester for which application is being made. Students outside the United States must submit admissions material at least six months in advance.

All appropriate immigration standards and requirements must be met.

Awarding of advanced standing credit to international students

Students are admitted to the freshmen level at Kansas State University with no award of credit for previous academic work. It is possible to receive academic credit by validation for comparable courses completed in the student's home country. If successful, students will receive credit for those particular courses. The following methods are used by Kansas State University to validate the awarding of advanced standing credit for international students who have completed work in their home countries at the postsecondary level:

1. **Validation by a comparable credit-granting department at Kansas State University.** Validation by one of the following two options will be at the discretion of the credit-granting department.

Option A—Course-by-course evaluation examination by comparable KSU academic department.

Option B—The advisor and/or academic dean's office make a preliminary evaluation of the level a student has completed and begin the student at that level. Upon successful completion of that course, all related lower-level courses in that area, as determined by the department granting credit, would be validated and credit awarded.

2. Credit is granted based upon recommendation by recognized academic publications, primarily the *World Education Series* of American Association of Collegiate Registrars and Admissions Officers.

American College Test (ACT)

Freshman applicants to KSU are required to take the ACT and have their test scores forwarded to the University. The test should be taken on one of the national test dates throughout the year, preferably in October. Numerous test centers are available throughout the state and nation. Further information about the ACT can be obtained from your high school counselor or principal.

Credit by examination

Many opportunities exist at Kansas State University to earn college credit by examination. KSU participates in the College Level Examination Program (CLEP), the Advanced Placement tests, and the DANTES testing program for military personnel. Examinations also are given in many course areas by individual departments within the University. See following sections for more information about departmental exams.

Details concerning testing opportunities at KSU are available on request from the Office of Admissions, 118 Anderson Hall, Manhattan, Kansas 66506.

Late enrollment

A student who seeks to enter the University later than ten calendar days after the start of the semester is admitted only by special permission of the student's dean. Those who enroll after the regular registration period and prior to the 20th day of class pay a late enrollment fee of $10.00. However, anyone enrolling after the 20th day of class must pay a $25.00 late enrollment fee.

Enrollment

Donald E. Foster, University registrar
118 Anderson Hall
532-6254

New student enrollment for the fall semester takes place in early summer. Admitted students are scheduled on specific days during this period. New students also may enroll during the August enrollment period.

New student advisement

All new students are assigned faculty advisors at the beginning of the school year. These advisors are available any time they need help. Faculty advisors assist students in defining goals to be reached in college, give information regarding appropriate curricula and courses, and discuss personal problems students may have, especially problems related to the student's progress and plans for subsequent work.

Medical history

Board of Regents' regulations require all new students to submit a medical history form prior to registration.

Special students

Students who have not participated in formal education for some time or students who do not intend to become candidates for a degree may enroll for credit in undergraduate courses as students in special status. International students do not qualify for this option.

Students applying for this special status need only submit an application for admissions. Test scores and transcripts are not required. However, students must provide an indication of their ability to successfully complete collegiate-level study as determined by admissions officers.

Those admitted as special status students will be allowed to complete a maximum of 15 semester hours in this status. In order to pursue work beyond the semester in which the 15th hour is completed, students must apply for regular admission to the director of admissions and meet all requirements for regular admission.

Under certain circumstances, outstanding high school students are admitted as special students to take several courses during the senior year. To be considered for such admission, a student must have the recommendation of the high school principal and have an outstanding high school academic record.

Adults who are not high school graduates are sometimes admitted as special students if the high school work they completed was of good quality, or if they show promise of collegiate success as evidenced by scores on the American College Test battery.

Special students are subject to regulations for regular students, and are responsible for payment of all fees, regular attendance at classes and maintenance of satisfactory standing.

Extension and correspondence credit

College-level credit earned through accredited extension divisions may be applied toward credit requirements for a degree at KSU. The credit must be applicable to the curriculum chosen and the amount of such credit which can be used is limited. For example, in the College of Arts and Sciences a maximum of 30 semester hours of acceptable correspondence and/or extension work may be applied toward a degree.

Credit by departmental examination

Any student who is enrolled at KSU is eligible to gain undergraduate credit by departmental examination. Credit may be granted for any course with the consent of the head of the department offering credit for that subject. Permission is granted only if the student has prepared for the examination. The examination must be taken under the supervision of the head of the department in which the course is given. A departmental examination may be given only to a student who has enrolled at KSU, and credit earned is considered resident credit.

Credit by examination may receive letter grades of A, B, C, or D, or a notation credit as determined by the department. The credit will be treated as resident credit and such graded work will receive grade points to be computed in the student's GPA. Non-graded credit by examination shall be treated as graded hours in implementing A/Pass/F policy.

Service school credit for veterans

In general, the University follows the recommendation given in "A Guide to the Evaluation of Educational Experiences in the Armed Services," published by the American Council on Education insofar as these recommendations apply to a student's degree program.

Assignment to classes

Students are responsible for fulfilling all requirements of the curriculum in which they are enrolled. They should consult with their advisors or deans in planning their work. Students should be familiar with *General Catalog* statements about assignments and curricula, because the catalog is the official source of information.

Catalogs are maintained for student use in the Office of Admissions, all deans' offices, the library, and all departmental offices. Students may purchase personal copies at the K-State Union Bookstore.

No student may be enrolled in classes or for private lessons in music or other subjects before getting an assignment. **No assignment is complete until all fees and charges are paid.**

Registration and assignment of courses take place as shown on the calendar earlier in this catalog. Later assignments to courses are made during regular office hours by the student's dean or advisor. A student may not enroll later than ten class days after the beginning of a semester (five days for summer session) except by permission of the dean. Students should enroll during regularly scheduled registration periods in order to avoid penalty fees.

An undergraduate student may not enroll for more than 19 Kansas State University credit hours in a semester unless the student is granted permission to do so by the student's academic dean or the dean's representative. If the published curriculum or a college or department in which the student is enrolled requires that more than 19 KSU credit hours be taken during a semester, this section does not apply.

Full-time faculty members and regular employees, with approval of their department heads or deans, may enroll in graduate or undergraduate work not to exceed six credit hours in fall and spring semesters or three credit hours during the summer session.

A student who has paid full fees on campus and who wishes to take a course through the Division of Continuing Education may receive a continuing education fee waiver except in cases of self-supporting courses (*e.g.*, Intersession or Non-Base). The fee

waiver form requires the University registrar's confirmation that full fees were paid, the college dean's approval for the additional hours, and final authorization by continuing education staff. Credit courses administered by the Division of Continuing Education award regular university credit and are included in the credit limits established in the preceding paragraph.

Dropping and adding courses

No student may drop a course or change an assignment except by a formal reassignment by the dean or dean's representative.

If an instructor recommends a reassignment, a student should confer with the advisor.

The last day for dropping a course without a W being recorded is at the end of the twenty-fifth day of classes. After the tenth week of classes, courses may not be dropped. In cases where courses are shorter than the full semester, deadlines will be applied pro rata.

The instructor **may** drop a student from a course after the first week of classes if the student has neither attended any of the scheduled class meetings nor notified the instructor of his/her intent to take the course. For purposes of this procedure enrollment in and payment of fees for a course **does not** constitute sufficient notification of intent to take a course.

Students desiring to transfer from one college to another within the University should confer with both deans concerned.

Retake policy

Undergraduate students may retake courses in order to improve the grade. If a course is retaken, the original grade is lined out, a retake notice inserted, and removed from the grade point average. Retakes can be accomplished only by re-enrolling in and completing a KSU resident course. Courses originally taken on a letter grade basis may be retaken on an A/Pass/F basis if appropriate, or if originally taken on an A/Pass/F basis may be retaken on a letter grade basis. The retake grade will always be used in the grade point average computation regardless of whether it is higher or lower than the original grade. There is no limit to the number of courses that may be retaken or the number of times a particular course may be retaken; however, the course will only count once toward meeting degree requirements.

Any course retaken after completion of a bachelor's degree shall not affect the credits or the GPA applied to that degree.

A/Pass/F policy

Undergraduate students, except first semester freshmen and students on probation, may enroll in certain courses for which they have the normal prerequisites under the A/Pass/F option. Under the A/Pass/F option, students earning a grade of A in a course will have an A recorded on the transcript for that course; a grade of B, C, or D will be recorded as Pass; a grade of F will be recorded as F.

Students should be aware that some schools, scholarship committees, and honorary societies do not find work taken on a non-graded basis (Pass) acceptable. Furthermore, many employers do not view non-graded (Pass) course work in a favorable manner. All students, especially those without a declared major, should be very cautious in using the A/Pass/F option.

Each department or division may specify which courses its majors may take under the A/Pass/F option consistent with the University requirements listed below.

1. Students may enroll under the A/Pass/F option for any free elective course offered under this option, that is, in any course which is in no way whatsoever specified even in general terms in the student's curriculum. Courses which are specified by name or number, and courses which meet general distribution requirements are not considered free electives.

2. Students may enroll under the A/Pass/F option for any general distribution requirement offered under this option, provided the course is in the upper division level (300 and above). General distribution requirements consist of those courses which are listed by areas, for example, three courses in the humanities.

3. Students may not enroll under the A/Pass/F option in any course which is required by name or number as part of their degree programs.

It is the responsibility of students requesting enrollment under the A/Pass/F to be sure that such an enrollment is valid in their degree program. A course originally completed under the A/Pass/F option may not be converted at any time to a graded basis.

Undergraduate students may submit Pass hours for graduation requirements up to and not exceeding 1/6 of the total number of hours required for a bachelor's degree. That is, 5/6 of all hours submitted for the bachelor's degree must be hours submitted on a graded or credit basis.

Students may request the A/Pass/F option for eligible courses during the third and fourth weeks of each regular semester or during the second week of the summer semester. Students requesting the use of the A/Pass/F option must obtain the signature of their advisors. The decision by a student to use the A/Pass/F option is treated with strict confidentiality.

Credit/no credit courses

Certain courses for which the learning experience is based primarily on participation and/or attendance may be offered solely on a credit-no credit basis. No grades are given for such courses.

For courses which are normally given for a grade, the designation credit may be obtained in the case of Credit by Examination. (See Credit by Departmental Examination earlier in this section.)

At the discretion of the graduate faculty member involved, courses in research numbered 898 (report), 899 (thesis), and 999 (dissertation) may be offered on a letter grade (A, B, C, D, F, Inc., or W) or Credit/No Credit basis. Letter grades are not given for any other such Credit/No Credit courses.

Class attendance

Class attendance policies shall be determined by the instructor of each course. Instructors will determine if, and the manner in which, work and exams missed may be made up.

Withdrawal from the University

A student who withdraws from the University must have an official withdrawal permit from the dean.

If a student withdraws during the first twenty-five days of the semester, no mark shall be reported to the University registrar.

Thereafter, a mark of W is reported. A student may not withdraw after the end of the tenth week of the semester.

Students who find it necessary to withdraw from the University for verifiable non-academic reasons after the tenth week should consult the office of their academic dean.

Auditing classes

Auditing is attending a class regularly without participating in class work and without receiving credit. Permission to audit a class is granted by the instructor, with the approval of the dean of the college in which the class is offered. A nonrefundable fee of $1 a semester hour is charged each auditor except full-time University faculty members, employees, and full-time students. Laboratory and activity courses may not be audited. Audits are not recorded on the permanent record. Students should not enroll in courses they plan to audit.

Dead week

The week before the final examination period (known as dead week), is set aside as a period of curtailed social activity. Examinations covering only the latter portion of course work may be given during regularly scheduled class periods of dead week, or during examination week at the times specified by the University Assignment and Scheduling Committee. Comprehensive examinations for laboratory or studio courses may be scheduled during a regular class period in the week immediately preceding the final examinations period.

Fees

Ralph H. Perry, comptroller

Fees subject to change. The following schedule of fees was in effect when this catalog was prepared. However, there is no guarantee this schedule will not be changed without notice prior to the beginning of any semester or summer session.

Payment of fees. Students must pay the total amount of their semester or summer session fees on the day they register and should use a check for exact amount of fees, MasterCard, or VISA. For students' safety, cash and checks requiring change are discouraged.

Late registration fees are assessed those who register or pay their fees after the regular registration period.

Students enrolled on a per-credit-hour basis or changing from six or fewer to seven or more credit hours will be assessed for all hours in which enrolled, including those for which the grade of W is recorded. Students withdrawing from courses are eligible for refunds in accordance with the refund policy.

Students receiving scholarships or grants not processed through the KSU Office of Student Financial Assistance prior to registration will be required to pay the full amount of their fees from personal resources on the day they register.

Withholding student records. When necessary, the University withholds students' academic records for non-payment of fees, loans and other appropriate charges and for non-return of University property.

Incidental fee. This fee is the student's contribution toward the costs of instruction and covers approximately twenty to twenty-five percent of the instructional costs.

Academic Services fee. This fee is used to finance library acquisitions and academic computing.

Student Services Support fee. This fee is used to finance adaptation and equipping of Holton Hall for improved delivery of student services programs.

Student Health fee. For a description of the services provided by this fee, see the section on Lafene Student Health Center later in this catalog.

Student Union Repair and Replacement fee. This fee is used for repairs and replacements at the K-State Union building.

Student Union Annex II Bonds fee. This fee is used to retire the K-State Union Annex II building revenue bonds.

Stadium Bonds fee. This fee is used to retire the KSU Stadium revenue bonds.

Student Coliseum Bonds fee. This fee will be used to retire the Student Coliseum revenue bonds.

Student Recreational Building Bonds fee. This fee is used to retire the Student Recreational Building revenue bonds.

Student Recreational Building program. This fee is used for the administration, support, and operation of the Student Recreational Building programs.

Student Activities fee. This fee is used for numerous student functions which include a broad range of student interests and activities. Those enrolling in six credit hours or fewer do not pay a full activities fee and thus are not entitled to student ticket rates for certain activities.

Fees for fall or spring semesters

The following schedule of fees was in effect when this catalog was prepared. However, there is no guarantee this schedule will not be changed without notice prior to the beginning of any semester.

For seven or more semester credit hours:

Fees	Resident	Non-resident
Incidental fee:		
Undergraduate	$450.00	$1290.00
Graduate	490.00	1415.00
Veterinary Medicine	660.00	1780.00
Special fees:		
Academic Services	10.00	10.00
Student Services Support	3.00	3.00
Student Health	55.00* **	55.00* **
Student Union Repair and Replacement	1.25	1.25
Student Union Annex II Bonds	10.25	10.25
Stadium Bonds	4.25	4.25
Student Coliseum Bonds	16.50	16.50
Student Recreational Building Bonds	12.00	12.00
Student Recreational Building Program	3.00	3.00
Student Activities (including Union operations)	25.25**	25.25**
Total Undergraduate	590.50	1430.50
Total Graduate	630.50	1555.50
Total Veterinary Medicine	800.50	1920.50

For six or fewer semester credit hours:

Fees		Resident	Non-resident
Incidental fee:			
Undergraduate	per credit hour	$ 30.00	$ 86.00
Graduate	per credit hour	33.00	94.00
Veterinary Medicine	per credit hour	44.00	119.00
Special fees:			
Academic Services	per credit hour	1.00	1.00
Student Services Support	per credit hour	.20	.20
Student Health	total fee	55.00* ***	55.00* ***
Student Union Repair and Replacement	total fee	.80	.80
Student Union Annex 11 Bonds	total fee	6.50	6.50
Stadium Bonds	total fee	.50	.50
Student Coliseum Bonds	total fee	7.50	7.50
Student Recreational Building Bonds	total fee	6.00	6.00
Student Recreational Building Program	total fee	1.00	1.00
Student Activities (including Union operations)	total fee	12.20****	12.20****

For employees enrolled in Graduate School:

Incidental fee	per credit hour	$ 33.00
Special fees:		
A. If enrolled in seven or more credit hours:		
Academic Services	total fee	10.00
Student Services Support	total fee	3.00
Student Health	total fee	55.00*
Student Union Repair and Replacement	total fee	1.25
Student Union Annex 11 Bonds	total fee	10.25
Stadium Bonds	total fee	4.00
Student Coliseum Bonds	total fee	16.50
Student Recreational Building Bonds	total fee	12.00
Student Recreational Building Program	total fee	3.00
Student Activities (including Union operations)	total fee	25.25
B. If enrolled in six or fewer semester credit hours:		
Academic Services	per credit hour	1.00
Student Services Support	per credit hour	.20
Student Services Support	total fee	55.00* ***
Student Health	total fee	.80
Student Union Repair and Replacement	total fee	6.50
Stadium Bonds	total fee	.50
Student Coliseum Bonds	total fee	7.50
Student Recreational Building Bonds	total fee	6.00
Student Recreational Building Program	total fee	1.00
Student Activities (including Union operations)	total fee	12.20****

*Students enrolled in a spring semester and pre-enrolled for the next fall semester but not attending summer school may use student health center services during the summer by paying a $15 fee prior to the first day of summer school classes. The fee will be $20 after the start of classes for such students and for those students not pre-enrolled for the fall semester, payable during the first visit to the health center. Students who have paid the health fee may elect to have their spouses covered if they pay, within ten days of the health fee payment, a spouse fee of $55 for a semester, or $15 or $20 (as appropriate) for a summer session.

**Students paying the full incidental fee who will be at off-campus locations during an entire semester and will reside outside of a 30-mile radius of Manhattan during that semester may elect to be exempted from the Student Health fee and the Student Activities fee.

***Students who initially enroll and continue to be enrolled in six or fewer credit hours for a fall or spring semester may elect to be exempt from the student health fee and thereby not be eligible for student health center services except on a fee per visit basis.

****Not a full activity fee and does not entitle student to student ticket rates for certain activities such as athletic events.

Fees for summer sessions

The following schedule of fees was in effect when this catalog was prepared. However, there is no guarantee this schedule will not be changed without notice prior to the beginning of any summer session.

Fees		Resident	Non-resident
Incidental fee:			
Undergraduate	per credit hour	30.00	86.00
Graduate	per credit hour	33.00	94.00
Special fees	per credit hour	10.00*	10.00*

*The summer session special fees are assessed only on the first six credit hours for each summer session, and are not applicable to students enrolled in formally organized classes actually conducted at off-campus locations. Includes Academic Services, Student Services Support, Student Health, Student Union Annex 11 Bonds, Stadium Bonds, Student Coliseum Bonds, Student Recreational Building Bonds, Student Recreational Building Program and Student Activities.

Persons eligible for resident fees

1. Residents. Usually includes adults and minors of parents who have been residents of Kansas for twelve months or more prior to registering for any semester or session. The official residency determination for fee purposes is made by the Office of the Registrar.

2. Employees. a) Employees of universities under the Kansas Board of Regents, other than hourly student employees, working four-tenths time or more as follows:

For fall semesters
More than half of September and all of October and November pay periods.

For spring semesters
More than half of February and all of March and April pay periods.

For summer sessions
Part of June and all of July pay periods, or more than half of February and all of March and April pay periods preceding the summer session.

(Pay period dates start on the 18th of the preceding month and end on the following 17th, e.g. September pay period starts August 18 and ends September 17.)

b) Employees of the federal government given adjunct appointments at Kansas State University or assigned to one of the ROTC units at Kansas State University.

3. Military. Military personnel stationed and living in Kansas except military personnel assigned to Kansas State University as full-time students.

4. Dependents. Dependent spouses and children of the employees and military personnel defined above.

5. Exchange students from Missouri. Students eligible to pay resident fees at the University of Missouri who are enrolled in the following programs at Kansas State University:

Bachelor and Master of Architecture
B.S. in architectural engineering
B.S., M.S., and Ph.D. in bakery science and management
B.S. in construction science
B.S., M.S., and Ph.D. in feed science and management
B.S. in horticulture therapy
Bachelor of Interior Architecture
Bachelor and Master of Landscape Architecture
B.S., M.S., and Ph.D. in milling science and management

This privilege is granted in exchange for resident fees for Kansas students who enroll in certain programs at the University of Missouri.

Other fees and refund policy

Private music lessons. University students enrolled in a degree program with a major in music, music education, or applied music are exempt from fees for private music lessons. Fees for all others, payable in advance, are as follows (subject to the availability of staff and facilities).

	University students	Non-University students
Two 30-minute lessons a week		
—semester	$50.00	$87.00
—summer session	25.00	43.00
One 30-minute lesson a week		
—semester	30.00	45.00
—summer session	15.00	22.00
Single lessons, per lesson	5.00	5.00
Practice Piano		
—semester, 1 hour daily	6.00	6.00
—summer session, 2 hours daily	6.00	6.00
Practice Organ		
two manual		
—semester, 1 hour daily	12.00	12.00
—summer session, 2 hours daily	12.00	12.00
three manual		
—semester, 1 hour daily	25.00	25.00
—summer session, 2 hours daily	25.00	25.00

Field geology fee. The fee for the summer geology field camp is $300, which is the additional amount required from all students enrolled in this course for their transportation and lodging for the field camp.

Refund policy. The following table applies to students who completely withdraw from a semester, summer session, field geology, or private music lessons and to the reduction, if any, in fees for students who reduce their enrollments. However, students who drop from full- to part-time fee status during a fall or spring semester will be given the option of receiving no refund of the student health fee and thereby remaining eligible to receive student health center services through the remainder of the semester, or forfeit student health center services for the remainder of the semester and receive a refund of the student health fee based on the time of the reduction in enrollment and the fee refund policy. The Student Activities fee is refunded only if the student fee receipt card is returned. Refunds will not be made until sufficient time has lapsed to ensure that fee payment checks have been honored by the bank—usually 15 days after student pays.

		Summer sessions	
Time of withdrawal	Regular semesters	8 weeks	Less than 8 weeks
Prior to second class meeting	not applicable		100%
On or before the first Friday of classes	100%	100%	no refund
On or before the second Friday of classes	90%	75%	no refund
On or before the third Friday of classes	80%	50%	no refund
On or before the fourth Friday of classes	70%	no refund	no refund
On or before the fifth Friday of classes	60%	no refund	no refund
On or before the sixth Friday of classes	50%	no refund	no refund
After the sixth Friday of classes	no refund	no refund	no refund

Late registration or fee payment: (not subject to refund)
After regular registration through 20th day of classes $10.00
After 20th day of classes $25.00

Exceptions. The $10 fee begins: after last regular evening registration if registering for evening classes only, after starting date for late starting classes and after the first Friday of classes for faculty, staff, and public school teachers. When registering by mail or exclusively for research, seminar or field study, the $10 fee begins 15 calendar days and the $25 fee begins 30 calendar days after notification of amount due. For summer sessions the fee increases from $10 to $25 after the 10th day of classes. Late fees do not apply to corrections of fee assessments.

Application for admission processing fees (not subject to refund). Application for admission to post-baccalaureate programs in business administration, veterinary medicine, and the departments of architecture, landscape architecture, and regional and community planning is $15.00. Application for admission of foreign student to undergraduate and graduate programs is $25.00.

Pre-professional skills test fee (not subject to refund). Administrative fee for each person taking the Pre-Professional Skills Test, Teacher Education Program, College of Education is $27.00.

Study Abroad Program fee (not subject to refund). Administrative fee per semester or summer term for each student enrolled in a study abroad program not taught or conducted by Kansas State University faculty is $12.50.

Loan application processing fee (not subject to refund). A fee of $10.00 is charged for processing each student application for a federal guaranteed student loan (not applicable to other fees).

Auditing fee. Auditing without charge is permitted on a space available basis which allows class attendance without participation or credit upon recommendation of the instructor and approval of the dean. This privilege is not applicable to laboratory and continuing education courses.

Student identification card. A fee for the original card is included in the Student Activities fees. A $5 fee is assessed for each card replaced.

Transcript fee. A fee of $1 is charged for each transcript of academic record requested by a student.

Laboratory fees and course charges or deposits. No laboratory fee, course charge, or deposit may be assessed against or collected from persons enrolled in any regular semester or summer session at Kansas State University, except for chemistry laboratory courses, geology field camps, and for excessive usage, breakage, or losses due to personal negligence on the part of the student. Charges for excessive usage, breakage, or losses may not exceed the actual fair value of supplies used or lost and are subject to the approval of the appropriate dean or the president.

Loans, misuse fees, and other charges. Kansas State University is authorized to approve loans to students as appropriate and to collect such loans and related interest and charges; and further, to collect library misuse fees, parking misuse fees, rental and use fees for recreational equipment furnished by the Department of Recreational Services, charges for providing copies of public documents, and charges for ROTC property, and student health services when such fees and charges are authorized. All such loans, fees, and charges are deemed to be part of this fee schedule.

Correspondence study. Information about correspondence study courses, including the fees charged, is available from the Extramural Independent Study Center, Division of Continuing Education, University of Kansas, Lawrence, Kansas 66045.

Charges to government or private agencies. The fees listed in this catalog do not limit the charges which may be collected under arrangements with other governmental or private agencies except that such arrangements may not provide for lesser charges. Compensatory or other charges to more nearly cover the actual cost of instruction are specifically authorized.

American Institute of Baking students. Students enrolled in a regular semester at the American Institute of Baking will be considered adjunct students by paying the fees, other than the incidental fee, for students enrolled in seven or more semester credit hours and will be entitled to use the student health service, K-State Union and Student Recreational Building, and to purchase tickets for athletic and cultural events at student prices.

Other expenses. In addition to the applicable fees, students are required to purchase textbooks, drawing instruments, slide rules, gym suits, and other personal equipment and supplies when needed for courses in the curriculum chosen. Costs will vary each semester, but are estimated to approximate the following:

Enrollment fees for an undergraduate Kansas resident	$ 591*
Books and supplies, about	156
Room and board in University housing	1,008
Clothing, laundry, postage, travel, extra meals and social activities (varies with the individual)	717
Total estimated expenses (half of academic year)	$2,472

*Fees for graduate, veterinary medicine, and non-resident students are shown earlier in this section.

Student employees

To be employed as a graduate assistant, graduate research assistant, or graduate teaching assistant, a graduate student must be enrolled in at least six resident semester credit hours at KSU during a fall or spring semester, and at least three resident semester credit hours at KSU during the regular summer session, or been enrolled in at least six resident semester credit hours at KSU during the preceding spring semester.
To be employed on the hourly student payroll, a student must be enrolled in at least seven resident semester credit hours (six for graduate students) at KSU during a fall or spring semester; and at least three resident semester credit hours (graduate or undergraduate) at KSU during a summer session, or been enrolled in at least seven resident semester credit hours (six for graduate students) at KSU during the preceding spring semester.

Student Financial Assistance

Robert W. Evans, director
Fairchild Hall
532-6420

Kansas State University administers an extensive financial aid program designed to bridge the gap between family contribution and the cost of attending the University. Detailed information concerning financial aid is available on request from the Office of Student Financial Assistance, Fairchild Hall, Manhattan, Kansas 66506.

All aid programs, except the Guaranteed Student Loan Program and regular campus jobs, require a student to submit a Kansas Student Data Form (KSDF) and a Family Financial Statement. Students living in Kansas may obtain the Kansas Student Data Form (KSDF) and the Family Financial Statement (FFS) from any high school counselor, or from KSU.

Scholarship programs

More than 2,500 Kansas State University undergraduate students receive more than $1 million of scholarship assistance each year based on their academic record and financial need. The priority date for submitting the financial aid application, Kansas Student Data Form, is January 15 prior to the fall semester in which the student intends to enroll.

Major scholarships

KSU students from throughout the University compete successfully for several well-known scholarship awards each year. These include the various grants made for graduate study abroad under the Fulbright Hayes Programs which send students to a country of their choice, usually for a nine-month period of research and/or formal study. The Rhodes Scholarship competition is another opportunity for students to win support for graduate study abroad. Winners are funded for two or three years of study at Oxford University in disciplines of their own selection. The Danforth Awards are made to stu-

dents who plan a career in university teaching in a field in the liberal arts. They support students through the Ph.D. degree. Sophomores interested in a career in government may apply for the Truman Award, which is made annually to a student in each of the 50 states and which supports the last two undergraduate years as well as two years of graduate study. Interested students may inquire at the dean's office, College of Arts and Sciences, 117 Eisenhower Hall.

Grants

Approximately 5,000 students are assisted through two federal grant programs. Assistance exceeds $5 million. The Kansas Student Data Form and ACT Family Financial Statement are the applications for these programs and should be filed by March 15.

Loan programs

Many KSU students who qualify on the basis of financial need are assisted through the National Direct Student Loan Program (NDSL). The NDSL is made at no interest while the student is enrolled and at five percent beginning six months after termination of studies. Repayments begin at that time. It is advisable to plan early and apply for loan assistance prior to March 15 of each academic year.

Other students borrow from the Guaranteed Student Loan Program. Applications may be obtained from participating lenders, banks, and savings and loans, or from any student financial aid office.

Qualified students also may borrow through emergency, alumni, and endowment funds to meet specific needs. Interested students should contact the Office of Student Financial Assistance, Fairchild Hall.

Employment

Kansas State University provides services for students seeking part-time employment to help offset educational, living, and social expenses. The Student Employment Center at K-State, located in 116 Fairchild Hall, handles two categories of jobs: College Work-Study Program jobs and Campus Payroll jobs. In addition, the center handles the advertising of several off-campus employment positions. All of the center's jobs are posted on the job board, which is located in the K-State Union.

Services for veterans

The University maintains a veterans' service to aid veterans and children of deceased or disabled veterans in securing educational benefits.

Those veterans who have more than 181 days of service after January 31, 1955, may be eligible for educational benefits.

Children of a deceased or disabled veteran may be entitled to educational benefits, providing the veteran's death or disability was due to active service in World War I, World War II, the Korean Campaign, or Viet Nam.

Information may be obtained from your nearest Veterans' Administration Office or the Office of Student Financial Assistance at Kansas State University.

State vocational rehabilitation program

The University cooperates with the State Board for Vocational Education in providing rehabilitation training for physically handicapped persons who need financial assistance. Correspondence should be addressed to the Vocational Rehabilitation Division of the State Board for Vocational Education, Topeka, Kansas.

Grades

The University uses the following grades:

A, for excellent work
B, for good work
C, for fair work
D, for poor work
F, for failure
P, for grades of B, C, or D in courses taken under the A/Pass/F option
Cr, for credit in courses for which no letter grade is given, (non-graded courses)
NCr, for no credit in courses for which no letter grade is given, (non-graded courses)
W, for withdrawn

The grade of Incomplete normally is given in regular courses (other than independent studies, research, and problems), only for personal emergencies which are verifiable. The student has the responsibility to take the initiative in completing the work, and is expected to make up the I during the first semester in residence at the University after receiving the grade, except for theses, dissertations, and directed research courses. If the student does not make up the I during the first semester in residence at the University after receiving it, a grade may be given by the faculty member without further consultation with the student.

Courses in which a Cr or P grade is received will be used in fulfilling graduation requirements. Only the grades A, B, C, D, and F are used in calculating resident grade averages.

Final examinations

A final examination period during which no regular classes meet is scheduled at the end of the fall and spring semesters. Final examinations are given during this period. There is no specially scheduled period for final examinations in the summer session.

Report of grades

Mid-semester grade reports for new freshmen are sent to deans' offices at the close of the seventh week of classes.

The instructor reports semester grades, based on the examination and class work, to the University registrar.

If a student drops a course after the twenty-fifth day of classes, a mark of W is reported. No course may be dropped after the date marking the close of this privilege as shown on the academic calendar. Regardless of the time of withdrawal, however, a final grade is reported and designated as such, if all the required work of the course has been completed.

In case of absence from the final examination, no semester grade is reported until the reason for such absence has been learned; the instructor reports a mark of I for Incomplete or computes the grade on the basis of zero for the final examination. If an Incomplete is reported, a reasonable time, usually not over one month, is allowed within which the examination may be taken.

For students who may be eligible to graduate in the spring semester, tentative grades will be collected at the end of regular class meetings. Instructors may revise tentative grades as a result of final exams.

Instructors leave all grade books in the proper departments when semester grades have been completed. The head of the department keeps all grade books on permanent file.

Points

For each semester hour of graded work, students earn points, as follows: A = 4, B = 3, C = 2, D = 1, F = 0, WF = 0.

Scholastic deficiencies

Probation, dismissal. A student's Kansas State University academic record of resident work is used to establish probation or dismissal status.

Students are notified of their status by their academic deans from information supplied by the University registrar. The scholastic record of each undergraduate is evaluated twice yearly, at the end of the fall semester and at the end of the spring semester. The student's scholastic status does not change as a result of work taken in summer session.

Undergraduate students (excluding students in the College of Veterinary Medicine) are placed on probation or dismissal according to the policy statement outlined later in this section.

Students will be placed on probation if they have completed 19 or fewer hours and the semester or cumulative grade point

Scholastic deficiencies chart

This chart may be used to determine deficiency for an overall average.

Hours completed	Grade points: Probation less than	Grade points: Dismissal less than
3	3	—
4	5	—
5	7	—
6	9	—
7	11	—
8	13	—
9	15	—
10	17	—
11	19	—
12	21	12
13	23	14
14	25	16
15	27	18
16	29	20
17	31	22
18	33	24
19	35	26
20	38	28
21	40	30
22	42	32
23	44	34
24	46	36
25	48	38
26	50	40
27	52	42
28	54	44
29	56	46
30	58	48
31	60	50
32	62	52
33	64	54
34	66	56
35	68	58
36	70	60
37	72	62
38	74	64
39	76	66
40	79	68
41	81	70
42	83	72
43	85	74
44	87	76
45	89	78
46	91	80
47	93	82
48	95	84
49	97	86
50	99	88
51	101	90
52	103	92
53	105	94
54	107	96
55	109	98
56	111	100
57	113	102
58	115	104
59	117	106
60	119	108
61	2.0 GPA	111
62	2.0 GPA	113
63	2.0 GPA	115
64	2.0 GPA	117
65	2.0 GPA	119
66	2.0 GPA	121
67	2.0 GPA	123
68	2.0 GPA	125
69	2.0 GPA	127
70	2.0 GPA	129
71	2.0 GPA	131
72	2.0 GPA	133
73	2.0 GPA	135
74	2.0 GPA	137
75	2.0 GPA	139
76	2.0 GPA	141
77	2.0 GPA	143
78	2.0 GPA	145
79	2.0 GPA	147
80	2.0 GPA	149
81	2.0 GPA	152
82	2.0 GPA	154
83	2.0 GPA	156
84	2.0 GPA	158
85	2.0 GPA	160
86	2.0 GPA	162
87	2.0 GPA	164
88	2.0 GPA	166
89	2.0 GPA	168
90	2.0 GPA	170
91	2.0 GPA	172
92	2.0 GPA	174
93	2.0 GPA	176
94	2.0 GPA	178
95	2.0 GPA	180
96	2.0 GPA	182
97	2.0 GPA	184
98	2.0 GPA	186
99	2.0 GPA	188
100	2.0 GPA	190
101	2.0 GPA	193
102	2.0 GPA	195
103	2.0 GPA	197
104	2.0 GPA	199
105	2.0 GPA	201
106	2.0 GPA	203
107	2.0 GPA	205
108	2.0 GPA	207
109	2.0 GPA	209
110	2.0 GPA	211
111	2.0 GPA	213
112	2.0 GPA	215
113	2.0 GPA	217
114	2.0 GPA	219
115	2.0 GPA	221
116	2.0 GPA	223
117	2.0 GPA	225
118	2.0 GPA	227
119	2.0 GPA	229
120	2.0 GPA	231
121	2.0 GPA	234
122	2.0 GPA	236
123	2.0 GPA	238
124	2.0 GPA	240
125	2.0 GPA	242
126	2.0 GPA	244
127	2.0 GPA	246
128	2.0 GPA	248
129	2.0 GPA	250
130	2.0 GPA	252
131	2.0 GPA	254
132	2.0 GPA	256
133	2.0 GPA	258
134	2.0 GPA	260
135	2.0 GPA	262
136	2.0 GPA	264
137	2.0 GPA	266
138	2.0 GPA	268
139	2.0 GPA	270
140	2.0 GPA	272
141 or more	2.0 GPA	more than 7 points below 2.0 GPA

average drops more than 3 points below a C (2.0) average; if they have completed 20 through 39 hours and their semester or cumulative grade point average drops more than 2 points below a C (2.0) average; if they have completed 40 through 60 hours and the semester or cumulative grade point average drops more than 1 point below a C (2.0) average; or if they have completed more than 60 hours and the semester or cumulative grade point average drops below a C (2.0).

Students are automatically taken off probation when the overall grade point average reaches the required level.

Students may be dismissed if they have completed 12 or more semester hours of resident graded course work, have been on probation the previous semester, and have a GPA more than 12 points below a 2.0 for 12-60 hours, 11 points below a 2.0 for 61-80 hours, 10 points below a 2.0 for 81-100 hours, 9 points below a 2.0 for 101-120 hours, 8 points below a 2.0 for 121-140 hours, and 7 points below a 2.0 for 141 or more hours.

Students who neglect their academic responsibilities may be dismissed at any time on recommendation of the academic dean.

Reinstatement. A dismissed student will be readmitted only when approved for reinstatement by the academic standards committee of the college the student is attempting to enter. Normally students must wait at least one semester before they will be considered for reinstatement.

The application for reinstatement must be directed to the academic standards committee of the specific college of the University in which the student wishes to enroll.

Students who earn a C (2.0) or better average on 12 or more credits during the semester they are dismissed can be considered for immediate reinstatement.

Scholastic honors

Bachelor's degree candidates who have completed a minimum of 60 hours in residence, with at least 50 hours in graded courses, are considered for graduation with scholastic honors as follows: Students with a 3.950 or above KSU academic average are designated as "summa cum laude." The remaining students in the upper three percent of the college graduating class are designated "magna cum laude." Those remaining in the upper ten percent are graduated "cum laude."

Students, with 12 graded hours whose semester grade point average places them in the upper ten percent academically of their classes and colleges, will be awarded semester scholastic honors.

Graduate School and veterinary medicine students are ineligible for these honors.

Credits for extracurricular work

Students may earn credit toward graduation by satisfactory participation in certain extracurricular activities. These activities, and the maximum semester hours of credit allowed, are as follows:

Subject	Semester	Total
KSU Symphony Orchestra	1	4
Bands (Marching, Symphonic, Pep, etc.)	1	4
University Chorus	1	4
Concert Choir	1	4
Collegiate Chorale	1	4
K-State Singers	1	4
Concert Jazz Ensemble and Jazz Labs	1	4
Varsity Men's Glee Club	1	4
Women's Glee Club	1	4
Madrigal Singers	1	4
Instrumental Ensemble	1	4
Vocal Ensembles	1	4
Opera Workshop	1	4
Debate	2	4
Kansas State Collegian journalism	1	4
K-State Agriculturist	1	4
K-State Engineer	1	2
Royal Purple journalism	1	4
Men's Athletics	1	4
Women's Athletics	1	4

Credits may be counted as electives in the student's curriculum. A student may use no more than eight semester hours in these subjects toward graduation and enroll for not more than two in a semester.

A student is regularly assigned to these activities, but only on the written recommendation of the instructor in charge of the work. A student participating in one or more of these activities must be enrolled even though the credits exceed the maximum for graduation.

Military training

Reserve Officer Training is offered by both the Air Force and Army. Students may enter the program during their freshman or sophomore years. Junior and senior students who qualify for the advanced ROTC program are paid $10 per month subsistence. Advanced ROTC includes summer training at a military base. Successful completion of the advanced program and a University degree earn the student a commission as a second lieutenant.

Scholarships are awarded on a competitive basis to entering freshmen, sophomores, and juniors. ROTC scholarships pay University tuition, lab fees, and books, plus a monthly subsistence of $100.

Academic credit may be applied to requirements for a degree. The colleges of engineering and architecture and design recognize four hours toward their degree requirements. The other colleges recognize 16 hours of the four-year ROTC program.

Classification of students

An entering student with less than 30 semester hours accumulated credit is classified as a freshman. A student is advanced to a higher classification upon successful completion of sufficient credit hours to meet the requirements as listed below:

Sophomore	Junior	Senior	Fifth-year student*
30	60	90	120

*Applies only to the College of Architecture and Design and the College of Engineering.

Student Conduct

Philosophy of student conduct

The members of the University community at KSU expect students to make mature responses to problem situations and to conduct themselves in exemplary fashion as they interact with all members of the learning community. However, if a student is unable to act as a responsible citizen in the University setting and violates the KSU Honor Conduct Code, the other members of the University community feel that they have an obligation to assist the student, help review the action, confront the student and those who have been offended, and make every effort to readjust the student's goals and responsibilities to the extent self-obligations and obligations to others can be fulfilled effectively and fully and continue the student's program toward a degree.

The confrontation necessary to bring about this analysis and potential change is provided by staff members of the Center for Student Development, faculty advisors, and student judicial system.

As the individual is involved in actions which do not meet the requirements of the members of the educated community, he or she is confronted and has the opportunity for change. There may be times when peers and those responsible for the climate of learning of the University feel that the best opportunity for change lies outside the University community. The student may be asked to remove himself or herself from the University setting for a particular amount of time. Such action is not taken lightly and must be taken in the context of concern for the growth and development of the student. It is expected that each student in the University community abide by the University Honor Conduct Code and assist each other student in the University community to do likewise. A student judicial system exists at KSU to provide a guaranteed due process in all judicial proceedings.

KSU Honor and Conduct Code

Individual responsibility and self-government are the major principles in maintaining honorable relations among KSU students, between the students and the faculty, and between the students and other members of the local community. All students are expected to show, both within and outside the University, respect for personal honor and the rights of others. A student's conduct and behavior will conform to standards of a good citizen when:

1. Kansas State University rules and regulations are adhered to.

2. Local community laws and customs are abided by.

3. He or she is honest in all scholastic work.

4. No irresponsible, destructive, or riotous acts are committed.

5. No acts reflecting adversely on Kansas State University, or acts which are detrimental to the public are committed.

6. The rights of fellow students are respected.

Academic honesty

The encouragement of high standards of academic honesty and integrity on the part of students is a function of every member of the faculty. Violations of the KSU Honor Code, instances of plagiarism, and cheating in an examination receive discipline from the instructor involved. While the instructor may exercise considerable discretion in assessing penalties for dishonest practices, if in doubt as to the proper course of action the student should report the case through the department head to the office of the dean of the college. The office of the vice president for student affairs frequently has access to correlative information which makes possible a more positive and consistent treatment of individual behavioral problems. Questions of procedure should be referred to the Academic Honesty and Undergraduate Grievance Statements, Faculty Senate minutes, May 9, 1978.

Disciplinary actions resulting in dismissal from the University are noted on the student's permanent record; other disciplinary actions become a part of the student's personnel record.

Questions concerning the KSU Honor Code and procedures concerning policies in student affairs and government should be directed to the dean of students' office.

KSU sexual harassment policy

KSU prohibits sexual harassment and has defined sexual harrassment as any behavior which, through inappropriate sexual content or disparagement of members of one sex, interferes with an individual's work or learning environment.

This policy applies to the working and learning relationships of all individuals within the University community—faculty, staff, and students. The complete policy and processes for resolution of complaints are available in all student government and departmental offices. Students who are sexually harassed by other students should report the incident to the dean of students office for appropriate action through the student judicial system.

Any conduct adjudged sexual harassment by appropriate University bodies will be considered a serious breach of the Kansas State University policy and of the Civil Rights Act of 1964.

Student Records

University policy

Kansas State University maintains various records concerning students, to document their academic progress as well as to record their interactions with University staff and officials. In order that the students' rights to privacy be preserved, as well as to conform with federal law, the University has established certain policies to govern the handling of students' records. Interpretation of these policies is based on continued experience with educational records, and the policies themselves may subsequently be modified in light of this experience.

The Office of the Registrar requires one of the following forms of identification for transcript requests, loan deferments, letters of verification, viewing records, and other processes:

Driver's license.
KSU Identification Card validated for the current semester.
KSU Student Fee Receipt for the current semester.

Directory information

Certain information concerning students is considered to be open to the public upon inquiry. This public information is called directory information and includes name, Manhattan address and telephone number, permanent mailing address, college, curriculum, year in school, date and place of birth, dates of attendance at KSU, awards and academic honors, degrees and dates awarded, most recent educational institution

attended, participation in officially recognized activities and sports, and height and weight of members of athletic teams.

Directory information as defined above will be released to anyone upon inquiry, unless the student has requested within 10 days after registering that specific items not be released. The student's request to have directory information withheld must be made each semester the student is enrolled at the University registrar's office, which will notify other appropriate University offices.

Confidential information

With the exception of the information noted above, students' records are generally considered to be confidential. The following policies govern access to student records:

1. Each type of student record is the responsibility of a designated University official, and only that person or the dean, director, or vice president to whom that person reports has authority to release the record. The responsible officials are:

a. Academic records: For undergraduates, the Office of the University Registrar; for graduate students, the Graduate School office

b. Admissions records: For undergraduates, the director of the Office of Admissions; for graduate students, the Graduate School office

c. Financial aid records: director of the Office of Student Financial Assistance

d. Business records: University comptroller

e. Traffic and security records: head of KSU Police Department

f. Medical records: director, Lafene Student Health Center

g. Counseling records: director, Counseling Center

h. Actions of academic standards committees: college dean

i. Academic disciplinary records: chair, Undergraduate Grievance Committee

j. Non-academic disciplinary records: dean of students

k. Residence hall records: director of residential area

l. Housing business records: director of the Department of Housing

m. Placement records: director of Career Planning and Placement

n. Evaluations for admission to graduate or professional programs: dean or department head

o. Special academic programs: faculty member in charge of the program, and dean of the college

p. Foreign student records: foreign student advisor

q. Test scores for College Level Examination Program (CLEP), American College Testing Program (ACT), Miller Analogies Test (MAT), or other tests: director, Center for Student Development

2. Confidential educational records and personally identifiable information from those records will not be released without the written consent of the student involved, except to other University personnel, or in connection with the student's application for financial aid or in response to a judicial order or subpoena, or in a bona fide health or safety emergency.

3. The responsible official may release records to University personnel who have a legitimate need for the information.

4. All student records are reviewed periodically. Information concerning the frequency of review and expurgation of specific records is available in the Office of the University Registrar.

5. With certain exceptions, students may review records which pertain directly to them upon request and may obtain a copy of the record at cost, according to the following schedule:

a. Transcript of academic record—one dollar per copy.

b. Housing department records—four cents per page.

c. Medical charts—free for medical, employment, or marriage license purposes; otherwise $7.50 to $15.00.

d. Other records—no charge.

The major exceptions to student review are medical and counseling records. These may be released, however, to other medical or psychological professionals at the written request of the student; and may be inspected by the patient at the discretion of the professional staff. Other exceptions are law enforcement records, private notes of staff members, and financial records of parents.

6. A student may waive the right to review a specific record by submitting in writing a statement to this effect to the official responsible for that record. Examples: Recommendations for career placement, or admission to graduate study.

7. **University personnel who have access to student educational records in the course of carrying out their University responsibilities shall not be permitted to release the record to persons outside the University,** unless authorized in writing by the student or as required by a court order. Only the official responsible for the records has the authority to release them.

8. All personal information about a student released to a third party will be transferred on condition that no one else shall have access to it except with the student's consent.

Release of grades

Reports of a student's grades are routinely sent to the student. Parents of dependent students may obtain grades by writing to the University registrar. Proof of dependency is required. The grades of other students will be sent to their parents only with written permission of the student.

When records may be withheld

In the case of a student who is delinquent in an account to the University, including unpaid traffic or parking violations, or about whom official disciplinary action has been taken, the appropriate University official may request that the student's record not be released. The effect of this action is that transcripts are not released, and registration forms are withheld. In order for the action to be rescinded, the registrar's office must receive written authorization from the official who originally requested the action, indicating that the student has met the obligation. Further information concerning this policy can be

obtained from the Office of the University Registrar, 118 Anderson Hall, 532-6254.

Review and challenge of records

Upon request, a record covered by the act will be made available within a reasonable time to the student and in no event later than 45 days after the request. Copies are available at the student's expense and explanations and interpretations of the records may be requested from the official in charge. If he believes that a particular record or file contains inaccurate or misleading information or is otherwise inappropriate, the University will afford an opportunity for a hearing to challenge the content of the record. Prior to any formal hearing, the official in charge of the record is authorized to attempt, through informal meetings and discussions with the student, to settle the dispute. If this is unsuccessful, the matter will be referred to the appropriate vice president. If the student is still dissatisfied, a hearing may be requested. It will be conducted by a hearing officer appointed by the president. The hearing will be held within two weeks. A decision will be rendered within two weeks after the hearing. The student will have the opportunity at the hearing to present any relevant evidence.

Complaints

A student who believes the University has not complied with federal law or regulations may send a written complaint to Department of Education, 400 Maryland Avenue, S.W., Washington, D.C. 20202.

Undergraduate Degrees

Common degree requirements

The common requirements for all curricula leading to an undergraduate degree are: English Composition I & II, six credits; Oral Communication I, two or three credits; Concepts of Physical Education, one credit.

Undergraduate degree requirements

To graduate, a student must complete a prescribed curriculum. Under special conditions substitutions are allowed as the interests of the student warrant. The total credit requirement for bachelor's degrees ranges from 120 to 167 hours, according to the curriculum taken.

There are two grade point averages a student must meet to be awarded an undergraduate degree: (1) at least 2.0 on KSU resident graded courses that are applied to the degree, and (2) at least a 2.0 cumulative GPA for all resident graded courses taken at KSU. Professional curricula may impose additional degree requirements.

Undergraduate students must file an Application for Graduation Clearance in the appropriate college dean's office during the first four weeks of the semester (first two weeks for summer) in which the degree is to be completed.

It is the student's responsibility to be certain that transcripts from all transfer institutions are on file in the Office of the University Registrar before the end of the semester or summer session degree requirements will be completed.

Up to one-half of the credit required for a normal four-year undergraduate degree may be completed at an accredited two-year college.

All students must complete at least 30 resident credits to be considered for a degree. Further, the student must complete 20 of the last 30 hours of resident undergraduate credit at KSU.

Courses in the student's major field shall be taken in residence unless an exception is granted by the major department on petition of the student. That department shall have jurisdiction over the acceptance of major courses by transfer for fulfillment of the major requirement.

Exceptions to the residence requirement of the final year may be made by the dean of the college and the department head in the student's major field if the student has completed a total of three years of work acceptable to Kansas State University; the student must submit satisfactory plans and reasons for completing the degree requirements at another institution as for medicine, dentistry, law, and medical technology prior to earning a degree here.

Resident work includes all regularly scheduled class or laboratory instruction given by the regular University faculty.

At least five-sixths of the credit hours taken at KSU and applied toward a bachelor's degree must be graded hours. Required courses of an internship or practicum nature or credit by examination, offered on a credit-no credit basis only, are to be considered as graded hours in implementing the five-sixth's policy.

Candidates for spring graduation are urged to attend commencement. Fall graduates are invited to participate in the December or the following spring commencement exercises. Prospective summer graduates may participate in the spring exercises prior to graduation. All participants must wear the appropriate cap and gown.

Most students complete degree requirements in the normal four or five academic years allotted for that purpose. However, some may take additional time because of a significant change of educational objective. Others may interrupt their studies for one or more semesters. Normally, the student will be expected to complete the degree program in not more than two years beyond the scheduled time. The individual, whose education has been interrupted, may have to meet new degree requirements if a change has occurred.

Dual degrees. Students may elect in some cases to earn two degrees at the same time. A minimum of 150 credit hours must be completed and the requirements for both colleges must be satisfied. Students should confer with their academic deans as early as possible to determine an appropriate program of study.

Students who are eligible to graduate must file an application for graduation in the academic dean's office during the first four weeks of the semester they plan to complete degree requirements. Summer graduates must file their application for graduation during the first two weeks of the summer session.

Mathematics entry requirements

The degrees shown below are conferred on completion of the prescribed curricula: The letter which precedes each curriculum indicates the suggested high school math courses, listed below. It is recommended that entering freshmen have completed these suggested mathematics courses.
(A) One unit of algebra, or one unit of geometry, or a unit involving the combination of these, or approved substitute.
(B) One unit of algebra.
(C) Two units of algebra.
(D) One unit of algebra and one unit of geometry (or approved substitute for Home Economics).
(E) One and one-half units of algebra and one unit of geometry.

(F) Two units of algebra, one unit of geometry, and one-half unit of trigonometry.

Undergraduate degrees

College of Agriculture
(Bachelor of Science in Agriculture)

(E) Agricultural economics
(E) Agricultural education
(E) Agricultural journalism
(E) Agricultural mechanization
(E) Agronomy (crops and soils)
(E) Animal sciences and industry
(E) Bakery science and management (B.S. in bakery science and management)
(E) Crop protection
(E) Feed science and management (B.S. in feed science and management)
(E) Food science and industry (B.S. in food science and industry)
(E) Horticulture
(E) Horticultural therapy
(E) Milling science and management (B.S. in milling science and management)
(E) Natural resource management
(E) Pre-forestry (non-degree)
(E) Pre-veterinary medicine (non-degree)
(E) Retail floriculture (associate degree and certificate program)

College of Architecture and Design
(F) Architecture—five years (Bachelor of Architecture)
(F) Interior architecture—five years (Bachelor of Interior Architecture)
(F) Landscape architecture—five years (Bachelor of Landscape Architecture)

College of Arts and Sciences
(Bachelor of arts, Bachelor of Fine Arts, Bachelor of Music, Bachelor of Music Education and bachelor of science)

(B) Anthropology, B.A. or B.S.
(A) Art, B.A. or BFA
(E) Biochemistry, B.A. or B.S.
(E) Biology, B.A. or B.S.
(E) Chemistry, B.A. or B.S.
  General chemistry
  Chemical science
(B) Computer science, B.A. or B.S.
(E) Correctional administration, B.A. or B.S.
(A) Dance, B.A. or B.S.
(B) Economics, B.A. or B.S.
(A) English, B.A.
(E) Fisheries and wildlife biology, B.A. or B.S.
(B) Geography, B.A. or B.S.
(E) Geology, B.A. or B.S.
(E) Geophysics, B.A. or B.S.
(A) History, B.A. or B.S.
(B) Information systems, B.A. or B.S.
Interdisciplinary studies
  (A) Humanities, B.A.
  (D) Life science, B.A. or B.S.
  (E) Physical science, B.A. or B.S.
  (A) Social science, B.A. or B.S.
(B) Journalism and mass communications, B.A. or B.S.
(F) Mathematics, B.A. or B.S.
(E) Medical technology, B.A. or B.S.
(E) Microbiology, B.A. or B.S.
(A) Modern languages, B.A.
(A) Music
  Music, B.A.
  Applied music, B.M.
  Music education, BME
(A) Philosophy, B.A. or B.S.
(A) Physical education, B.A. or B.S.
(E) Physics, B.A. or B.S.
(B) Political science, B.A. or B.S.
(E) Pre-dentistry, B.A. or B.S.
(E) Pre-law (non-degree)
(E) Pre-medicine, B.A. or B.S.
(E) Pre-nursing (non-degree)
(E) Pre-optometry (non-degree)
(E) Pre-pharmacy (non-degree)
(E) Pre-physical therapy (non-degree)
(E) Pre-veterinary medicine (non-degree)
(E) Psychology, B.A. or B.S.
(B) Radio-television, B.A. or B.S.
(A) Recreation, B.A. or B.S.
(E) Social work, B.A. or B.S.
(E) Sociology, B.A. or B.S.
(A) Speech, B.A. or B.S.
(A) Speech pathology-audiology, B.A. or B.S.
(A) Statistics, B.A. or B.S.
(A) Theatre, B.A. or B.S.

College of Business Administration
(Bachelor of Science in Business Administration)

(E) Accounting
(E) Finance
(E) General business administration
(E) Management
(E) Marketing

College of Education
(A) Elementary Education (Bachelor of Science in Elementary Education)
Secondary Education (Bachelor of Science)

(A) Education—Adult
(A) Education—Art
(E) Education—Biological science
(B) Education—Business
(E) Education—Chemistry
(E) Education—Earth science
(B) Education—Economics
(A) Education—English
(A) Education—Geography
(A) Education—History
(A) Education—Journalism
(F) Education—Mathematics
(A) Education—Modern languages
(E) Education—Physical science
(E) Education—Physics
(B) Education—Political science
(B) Education—Psychology
(B) Education—Sociology
(A) Education—Speech

College of Engineering
(F) Agricultural engineering (B.S. in agricultural engineering)
(F) Architectural engineering (B.S. in architectural engineering)
(F) Chemical engineering (B.S. in chemical engineering)
(F) Civil engineering (B.S. in civil engineering)
(F) Construction science (B.S. in construction science)
(F) Electrical engineering (B.S. in electrical engineering)
(E) Engineering technology (B.S. in engineering technology)
(F) Industrial engineering (B.S. in industrial engineering)

(F) Mechanical engineering (B.S. in mechanical engineering)
(F) Nuclear engineering (B.S. in nuclear engineering)

College of Home Economics
(B.S. in clothing and textiles)

(C or D) Apparel design
(C or D) Fashion marketing
(C or D) Textile science

(B.S. in consumer and family economics)
(C or D) Consumer affairs
(C or D) Housing and equipment

(B.S. in dietetics)
(C or D) Dietetics

(B.S. in family and child development)
(C or D) Early childhood education
(C or D) Family life and human development

(B.S. in foods and nutrition)
(C or D) Foods and nutrition business—community service
(C or D) Foods and nutrition science
(C or D) Nutritional sciences

(B.S. in food science and industry)
(C or D) Food science and industry

(B.S. in health)
(C or D) Health

(B.S. in home economics)
(C or D) General home economics
(C or D) Home economics extension
(C or D) Home economics with liberal arts

(B.S. in home economics and mass communications)
(C or D) Home economics and mass communications

(B.S. in interior design)
(C or D) Interior design

(B.S. in restaurant management)
(C or D) Restaurant management

(B.S. in textile chemistry)
(C or D) Textile chemistry

(B.S. in vocational home economics education)
(C or D) Vocational home economics education

College of Veterinary Medicine
Veterinary Medicine (Doctor of Veterinary Medicine)
(See colleges of agriculture and arts and sciences for B.S. degrees in connection with College of Veterinary Medicine.)

Student Services

Student Affairs

Chester E. Peters, vice president for student affairs
Pat J. Bosco, assistant vice president
Veryl Switzer, assistant vice president
104 Anderson Hall
532-6237

Student services at KSU provide opportunities and programs aimed at improving and supporting academic activities; intellectual development; vocational interests, aptitudes, and skills; emotional balance; social relationships; moral and religious values; physical health; and aesthetic appreciations.

Student needs for medical care, housing, food, employment, counseling, recreation, and spiritual inspiration have been included.

The vice president for student affairs maintains a close relationship with faculty and administrative staffs to interpret student needs, and has responsibility for the administration and coordination of Career Planning and Placement Center, Center for Student Development, Greek Affairs, Housing, K-State Union, Lafene Student Health Center and University Hospital, and Recreational Services.

Department of Housing

Thomas J. Frith, director
Pittman Building
532-6453

Kansas State University considers the housing of students a part of the total educational plan. All students are invited to live in the University residence halls. *All single freshmen are required to live in a residence hall or Greek chapter house if space is available.* General exceptions to this policy are veterans of the armed forces or students living at home.

Other exceptions to this policy must be cleared through the director of housing.

Available housing facilities

Kansas State University provides residence hall living for 4,500 students, cooperative housing for approximately 64 women, and 576 apartments for student families. Sororities provide 650 places for women, and fraternities have accommodations for 1,400 men. Others find privately owned rooms and apartments from University listings.

Self-government in residence halls

Learning to manage your own affairs is certainly a part of university life. This takes maturity and self-discipline. All residence halls have a system of self-governance through which students work together in determining policies regarding a variety of issues. Elected representatives serve on individual hall governing boards and assume responsibility for many social and educational activities.

Residence halls

Each residence hall is staffed with a director who is a full-time professional and a student staff of resident assistants. The total residence hall program is coordinated by the director of housing.

The following services and facilities are furnished in residence halls: sheets and pillowcases—laundered bi-weekly; free washers and dryers, areas for hand laundry; pleasant rooms with beds, mattresses, chests of drawers, closets, and study tables. The student furnishes pillow, towels, blankets, bedspreads, and other personal items.

All of the residence halls have quiet study rooms, and several halls have computer terminals. Each hall also has lounges and recreation areas for relaxation and social activities, with televisions, stereo equipment, ping-pong tables and the like.

With the exception of the Sunday evening meal, three meals are served daily. Most meals are served cafeteria style, but special dinners and buffets add to the variety of the food service program.

Contracts are issued on receipt of a residence hall room application and $25 non-refundable application fee for fall enrollees and $12.50 for those entering in the spring.

When the hall application and fee are received by the Department of Housing, a nine-month housing contract is forwarded to the student.

Students may elect either the full payment plan or installment plan.

Payment schedule

(A) Full payment of $910 or (B) payment schedule (if not paid in full) below:

Fall semester		Spring semester	
Payment with contract	$230	January 10	$230
September 10	230	February 10	230
October 10	230	March 10	230
November 10	230	April 10	230

Rates are subject to change.

Applications and detailed information are available through the Department of Housing, Pittman Building, Manhattan, Kansas 66506.

University cooperative housing

The Georgiana Smurthwaite House provides cooperative living for 64 women at low cost.

It is a cooperative house in the sense that the students do their own housekeeping—cooking, cleaning, and dishwashing. In this way living costs, a big item in the budget, are lowered considerably. The 1984-85 costs will be $700.00.

Applications for this house are considered on the basis of academic ability and financial need. Write to the Department of Housing for applications and information.

Family housing

Student families at Kansas State University have access to one- and two-bedroom apartments at Jardine Terrace, available both furnished and unfurnished. These low-cost apartments are close to the campus. Each group of buildings has a central laundry.

The furnished apartment rates are $131.00 a month for a one-bedroom apartment and $157.00 a month for a two-bedroom apartment. A limited number of unfurnished apartments is available; one-bedroom $126.00 per month, two-bedroom $144.00. The rental includes gas and water. Rates are subject to change.

Families residing in Jardine Terrace Apartments use the mayor-council form of government to regulate community life.

Applications are available at the Department of Housing, Pittman Building.

Graduate student housing on campus

Single graduate students are welcome to live in the residence halls. Edwards Hall is reserved for graduate and upperclass students.

Single graduate students also qualify for the Evans Apartments. There are 20 apartments in this building that rent for $136.00 a month for one bedroom and $157.00 a month for two bedrooms. Furniture, water, and heat are provided. Applications are available from the Department of Housing.

Off-campus housing

The Department of Housing, Pittman Building, has a card file of rooms and apartments available in Manhattan. Students who wish to live off campus must visit Manhattan and personally select their own rooms and apartments.

Room listings change too rapidly to be of use by mail. Rent averages $125.00 a month for one person, with a range of $100 to $450 a month, depending on size of unit. Various meal plans at the K-State Union Cafeteria are available.

All Manhattan householders who rent to students are expected to follow the University policy of making accommodations available to all students regardless of race, color, or national origin.

Other Housing

Sororities

Booklets describing sororities and setting forth the provisions regulating selection of new members are provided to all prospective freshmen and interested upperclass women by Panhellenic Council. These may be obtained by writing to the faculty advisor to sororities.

House bills in sororities will average approximately $1,000.00 a semester. This includes room, board, and sorority dues. Freshman members, however, live in residence halls and pay sorority dues of approximately $40.00 a month.

The following national sororities have established chapters at KSU: Alpha Chi Omega, Alpha Delta Pi, Alpha Kappa Alpha, Alpha Xi Delta, Chi Omega, Delta Delta Delta, Delta Sigma Theta, Gamma Phi Beta, Kappa Alpha Theta, Kappa Delta, Kappa Kappa Gamma, Pi Beta Phi, Sigma Sigma Sigma and Zeta Phi Beta.

Fraternities

Fraternities select new members primarily during the summer months. High school seniors are often guests at fraternity houses during the senior year, and throughout the spring and summer months each fraternity has representatives visiting high school seniors and their parents in Kansas and surrounding states.

Freshman men may live in a fraternity house if they accept invitations to membership before classes start and if they cancel their residence hall contracts. Costs will average $1,000.00 a semester. For more information, write to the faculty advisor to fraternities.

The following national fraternities are established at K-State: Acacia, Alpha Gamma Rho, Alpha Kappa Lambda, Alpha Phi Alpha, Alpha Tau Omega, Beta Sigma Psi, Beta Theta Pi, Delta Sigma Phi, Delta Tau Delta, Delta Upsilon, FarmHouse, Kappa Alpha Psi, Kappa Sigma, Lambda Chi Alpha, Omega Psi Phi, Phi Delta Theta, Phi Gamma Delta, Phi Kappa Tau, Phi Kappa Theta, Pi Kappa Alpha, Pi Kappa Phi, Sigma Alpha Epsilon, Sigma Chi, Sigma Nu, Sigma Phi Epsilon, Tau Kappa Epsilon, Theta Xi, and Triangle.

Clovia

Clovia 4-H House provides accommodations for 62 women. Although 4-H members are given preference, any coed is eligible to apply for membership. Clovia 4-H House is a cooperative unit with the members supplying the labor for cooking and cleaning. Monthly house bills are approximately $135.00, including social fees. The women spend about six hours a week at their house duties. Applications are made through the County Extension Offices, the State 4-H Department at Kansas State University, or the Clovia Membership Chairman, 1200 Pioneer Lane, Manhattan, Kansas 66502, 913-539-3575.

The Smith Scholars Program

The Smith Scholars Program provides a broad learning experience for 40 young men each year. Smith Scholars are selected on the basis of academic promise and financial need. The Smith Scholars live in Smith Scholarship House, a cooperative living arrangement wherein the men do the cooking and housekeeping duties.

Within that context, the men develop and participate in programs in nine areas important to personal growth. The areas addressed are: academic achievement, social growth, cultural exposure, personal health, vocational planning, university involvement, leadership, governance, and community involvement and service.

The Smith Scholars Program is a joint project of the Maitland E. Smith Scholarship House Alumni Association, the Office of the Provost, and the KSU Foundation. For more information write: Smith Scholars Program, Office of the Provost, Anderson Hall, Manhattan, Kansas 66506.

Center for Student Development

Earl Nolting, director
Holton Hall
532-6432

Units within the Center for Student Development are organized to identify and meet the needs of K-State students. Responsibilities include maintaining a working relationship with residence halls, fraternities and sororities, student government, student organizations, campus religious groups, and the University judicial system.

The center directs programs such as: special assistance to minority and foreign students, a women's resource center, student leadership and staff training, workshops for housemothers, group life seminars, programs and assistance for the older adult student, discussion groups in study skills instruction, vocational and occupational information, and interpersonal relations. Counseling assistance also is available. The center is located in Holton Hall.

CSD programs are evaluated by staff members who also study characteristics and development of KSU students. Several staff members hold part-time academic appointments.

Religious activities

Religious life at the University finds expression in 25 student religious organizations and in approximately 40 congregations in Manhattan. The coordinator of religious activities in Holton Hall provides information regarding religious activities and organizations as well as pastoral resources in the community. Pastoral care and counseling are available through the office of the coordinator of religious activities and by referral to campus ministers and local clergy. There are two memorial chapels on campus, Danforth and All Faiths, which are available for student worship, weddings, and private meditation. Chapel use is scheduled through the Center for Student Development.

Minority affairs and special programs

Several programs are offered to assist low-income, minority, and physically limited students in educational development.

Educational Supportive Services. Low-income, physically limited, and minority students are assisted in setting and attaining realistic educational goals and are provided information about post-secondary educational opportunities at KSU. Students admitted and enrolled at KSU are offered educational supportive services including counseling (personal, vocational, academic, and financial), academic pre-advising, individualized tutorial assistance, and a variety of referral services.

Cultural Enrichment Program. Emphasis is placed on encouraging minority students to seek leadership roles on campus; advising minority student organizations including the Black Student Union, MEChA (a Chicano student organization), Puerto Rican Student organization, and the American Indian Student Body; and assisting student organizations in sponsoring programs and lectures which bring minority leaders to KSU and heighten multi-racial awareness within the community.

Upward Bound Program. This federally funded program provides academic and personal counseling and guidance to low-income high school students from Junction City, Manhattan, St. George, Wamego, and Westmoreland high schools. Designed to motivate students with academic potential to pursue a post-secondary education, Upward Bound provides its 10th, 11th, and 12th grade participants with academic, social, cultural, and career-oriented activities and experiences during the school year, and with a residential credit-bearing educational program during the summers on the KSU campus.

Physically limited students

Services for Physically Limited Students attempts to meet the needs of students with a physical limitation by providing one-to-one counseling, as well as academic, vocational, and financial guidance. Counselors can obtain tutors for students, help with rescheduling classes when they are scheduled in inaccessible locations, and act as liaisons with students' instructors. A shuttle service is available for students with either temporary or permanent physical limitations. The shuttle is an on-campus, building-to-building service.

Other services available to physically limited students include: readers, notetakers, and interpreters; typing and errand service; reading and study skills instruction; special arrangements for test taking; assistance with accessible housing; assistance in arranging attendant care; and individualized help with registration.

Assistance or additional information can be obtained by contacting Gretchen Holden, Holton Hall, Room 101.

Counseling Center

Professional counselors and psychologists are available to KSU students and their spouses (and others on a limited basis).

Individual, couple, and group counseling is offered for persons wishing to discuss academic, career, or personal concerns. A policy of confidentiality is followed. No information is released without written authorization of the student. Psychological testing may be used as an adjunct to career or personal counseling.

In addition, programs, using workshop or seminar format, are offered to enhance personal growth and skill development. These include: stress management, biofeedback, career life planning, assertiveness training, couples communication, peer sex education, pregnancy counseling, study skills assistance, managing change, and creativity development. Academic credit courses are offered in Career Life Planning (EDAF 511), Study Skills (EDCI 051), and Guidance for the Paraprofessional (EDAF 311).

Consultation by center staff members is offered to the individual student, staff, or faculty member concerning matters that they may deal with in their work and living environment. Additionally, staff is available for class or group (organization) presentations and workshops upon request.

Appointments may be made by contacting the receptionist in Holton Hall. Urgent matters may be handled by the counselor-on-call during normal office hours.

International Student Center

The International Student Center provides KSU students, faculty, and staff the opportunity for sharing and learning experiences with the large number of international students attending KSU. The center also encourages campus, community, and state involvement in international programs. The center includes a lounge, multi-purpose room, kitchen, dining room, and office areas, and the foreign student office.

Foreign Student Office

The Foreign Student Office serves more than 800 KSU students from other countries. It also serves those who have graduated and are on practical training. The office provides administrative services and advises students about renewals of stay, passports, work permits, finances, travel, housing, and University services. In addition, it acts as a resource for the campus, community, and state concerning international student programs and services.

Program Development and Evaluation

This staff assists in planning, implementing, and evaluating programs. Programs and workshops will, upon request, be designed to assist faculty groups, student personnel staff, student organizations, and volunteers to improve their programming effectiveness.

The staff conducts and publishes research on the characteristics, attitudes, and needs of the KSU students. This research is published in the report series, *Studies in Student Personnel.*

CLEP testing center

The Center for Student Development is the campus service agency for the College Level Examination Program (CLEP). CLEP examinations may be taken on the third Saturday of every month by anyone properly registered with the College Entrance Examination Board. In addition, special testing dates are scheduled at the start of each academic semester for students desiring to test out of courses in which they are currently enrolled. The center staff also will conduct utility studies and provide consultation to academic departments interested in implementing CLEP examination procedures for their courses. Information and registration for the CLEP program is available at the Center for Student Development.

Student activities

This office coordinates two all-campus leadership workshops annually, advises organizations and the Student Government Association (SGA) and assists individuals and groups who wish to organize and register their activities on the KSU campus.

Student government

The purpose of the Student Governing Association (SGA) is to help students voice any problems, suggestions, or grievances they may have. It is the students' answer to self-government.

Every student is automatically a member of the Student Governing Association and is represented by a college council (elected by the students in each respective college), by one student senator for each 300 students enrolled in the colleges, and by the student body president. The student senators and the student body president are elected by the KSU student body.

SGA is divided into three branches: legislative, judicial, and executive. The legislative branch—student senate—is composed of the following eight standing committees: academic affairs, communications, finance, personnel selections, senate operations, social services, state and community affairs, and student affairs. A major function of student senate is the allocation of the student activity fee, which is collected as part of the tuition payment. It is used to assist student and University organizations in providing programming and services to the KSU community.

The judicial branch is composed of judicial council, tribunal, the traffic appeals board, and the living group judicial boards.

The student body president and his cabinet make up the executive branch. He has the responsibility to promote the general welfare of the students and acts as the official voice of the student body to the faculty, administration, and public.

Another form of representation is the Associated Students of Kansas (ASK). ASK is a student lobby group which takes the concerns of students in each of the state schools to the Kansas legislature.

U-LearN

University Learning Enhancement Resource Network (U-LearN) is a comprehensive walk-in and phone-in resource center. Questions regarding academics, campus, or community activities and information in general may be directed to 532-6442. The walk-in service is housed in 1 Holton Hall, and is staffed by trained paraprofessionals every afternoon. Information is provided in such areas as career exploration, study skills, sexuality, and wellness.

U-LearN also operates the campus and community information section of the DIAL taped information system. This facility maintains a library of cassette recordings on topics of interest to University staff and students. Brochures listing the tapes available can be found in the lobby of Holton Hall; at the U-LearN office, 10 Holton Hall; at the FONE office, 1221 Thurston St.; and in other public places on campus. To hear the tape of your choice call 532-6907.

Entrance and professional examinations

The following examinations often are required to enter selected undergraduate, graduate, or professional programs. To register or obtain information, contact the Center for Student Development.

Allied Health Professions Admissions Test
American College Test (residual)
American College Test-Proficiency Examination Program
Dental Admissions Testing Program
Graduate Management Admission Test
Graduate Record Examination
Law School Admission Test
Miller Analogies Test
Scholastic Aptitude Test
Test of English as a Foreign Language
Veterinary Aptitude Test

Office of Women's Programs and Women's Resource Center

The Office of Women's Programs and the Women's Resource Center (WRC) are located in Holton Hall. They serve as an information center, referral agency, and a catalyst for change on campus. Numerous programs designed to raise the level of awareness regarding changes in men's and women's traditional roles are offered by or coordinated through the WRC. Both men and women are invited to consult with the staff, make use of the center's books and articles, and participate in program offerings.

Adult students—*fenix* office

The *fenix* office serves undergraduate students who are 25 years of age and older. Re-entry students often have special concerns which can be addressed by staff specialized in working with older adult students. *Fenix*, expresses the spirit of renewal and regeneration which re-entry students exemplify.

Persons considering re-entering college and currently enrolled adult students are urged to see the *fenix* coordinator in 102 Holton Hall.

Alcohol and other Drug Education Service

The Alcohol and other Drug Education Service (ADES) offers information about physical effects and social issues related to alcohol and other drug use. To accomplish this purpose, a number of campus services are provided, including: various media activities such as newspaper ads, posters, brochures, and radio public service announcements; coordination of and participation in awareness events, such as the campus Alcohol and other Drug Awareness Fair, Health Fair, and Women's Fair; support for the DIAL telephone taped information service, presentations providing information on alcohol and drug-related topics, and assisting with workshops on coping skills such as assertive communication and stress management. In addition the Alcohol and other Drug Education Services initiates resource projects regarding the influence of alcohol and drugs on campus and the effect of these substances on students. ADES can also make referrals to counseling resources for those with concerns about their own or another's possible alcohol or other drug problem.

Student organizations

More than 200 organizations are available to students, faculty members, staff, and community members.

The Activities Carnival, usually the first Sunday of the first full week of classes, offers an opportunity for new and old members of the University community to acquaint themselves with campus clubs and organizations.

Any organization desiring to become a registered student organization must adhere to the University Activities Board (UAB) constitution and current guidelines, including a statement of purpose or constitution, the names of the organization's officers, a full-time faculty advisor, declaration of any outside affiliations, registration with UAB of any fund-raising projects, open membership, and an agreement to abide by the rules and regulations of the University.

Registered campus groups may schedule rooms and tables in the K-State Union, utilize most campus facilities, and post notices on the campus Alpha Phi Omega bulletin boards.

Applications and information regarding student organizations may be obtained by contacting the coordinator of student activities.

Lafene Student Health Center

Robert Tout, M.D., director
532-6544

The Lafene Student Health Center and University Hospital is a Joint Commission accredited hospital serving the health needs of KSU students. It is centrally located on campus and contains a large outpatient clinic and a 21-bed unit where students may be hospitalized when necessary. It is a modern facility, caring for all student needs with the exception of major surgery, and has a pharmacy, physical therapy department, medical laboratory, and X-ray department. The health center is entirely student funded; therefore only fee-paying students are provided care.

The Mental Health Section provides diagnostic, consultative treatment, and referral services to students experiencing emotional or psychological problems. A health educator is available to assist students. Student spouse medical service is also available during registration.

The center is staffed by full-time physicians with medical-supporting personnel. When necessary, the student is referred to specialists for treatment at the student's expense.

Medication, laboratory tests, and X-rays are available at the center at reduced rates. Many services are offered at no cost. Hospitalization in the University Hospital is provided at special rates.

After regular clinic hours a student who is ill or injured may receive medical care through the after-hours clinic of the Lafene Student Health Center. Home calls are not made. The local ambulance service is available to transport patients to whichever hospital the case indicates, i.e., obvious surgical cases are taken directly to a hospital offering such care.

It is strongly recommended that all students at Kansas State University carry medical insurance, either through the parents' plan at home or through the health insurance program available to students at special rates. This plan supplements the coverage provided free or at reduced costs by the Lafene Student Health Center on campus and covers payable claims for medical expenses if the student requires care away from the campus.

Kansas State University requires a complete medical history on all new students or transfer students. This history must be completed on the Kansas State University medical history form. A physical examination is not required, but highly suggested, and a copy of this examination assists the staff in evaluating illnesses. If a student has a continuing medical problem, a summary from the attending physician would be helpful for future treatment. Students receiving allergy injections must furnish instructions from their allergist before injections can be administered at the health center.

Students are welcome to visit the health center anytime for a personal view of the facilities and are urged to bring their medical questions or concerns to the professional staff. Services and charges are subject to change without notice.

K-State Union

Walter D. Smith, director
532-6591

The K-State Union is one of the centers for social, recreational, and cultural activities on the KSU campus.

Built entirely by student fees, the Union features a cafeteria-snack bar, 576-seat auditorium, 280-seat Little Theatre, full-service bookstore, recreational facilities (bowling, billiards, table tennis, and more), art gallery, central information desk, lounges, banquet rooms, copy center, and activities center.

The Activities Center houses Union Program Council, a student volunteer organization that provides more than 300 programs annually for the cultural, educational, and personal growth of students. All students are welcome to participate in the Union Program Council.

Student Governing Association offices are also located in the Union. The Union also operates on-campus vending machines.

In operation since 1956, the Union operates on a self-supporting basis with income from eight operating units and student fees.

The K-State Union director and staff operate the building under the guidelines and policies established by the Union Governing Board. The board consists of students, faculty, and alumni, and acts as a board of directors for the operation of the Union.

Recreational Services

Raydon H. Robel, director
532-6980

Recreational Services is the department responsible for many of the intramural, recreational sports, and fitness programs for the campus. With the current interest and emphasis on recreation and fitness, thousands of participants are involved in programs yearly.

Intramural sports are the scheduled competitive activities of the recreation program. Teams are organized from fraternities, sororities, residence hall floors, off-campus groups, co-rec, and faculty/staff groups. Thousands participate in various activities and engage in both team and individual sports without regard to skill level. Over 30 different intramural activities are offered for competition.

KSU has superior facilities to accommodate participants. The natatorium located at the Ahearn Sports Complex has two 25-yard swimming pools, one diving pool with two 1-meter and two 3-meter boards, and a sun deck area.

The indoor Recreation Complex became operational in 1980. It houses 16 handball/racquetball courts; 2 gyms (convertible to 6 basketball, 9 volleyball, 6 tennis, and 18 badminton courts); 2 weight and exercise areas; dance area; combatives area; running track; men's and women's locker rooms with showers and saunas; central supervisory and check-out area; and administrative offices. Included in this is the latest fitness and weight training equipment. Many group-led programs are available for the participants as well.

Outdoor facilities available include lighted tennis and handball/racquetball courts; multi-purpose playfields; archery range; golf driving area; fitness cluster; and running trails. Outdoor recreational equipment, including canoes, tents, sleeping bags, and other camping equipment is available on a rental basis.

For students interested in a unique learning experience, the department provides student employment as lifeguards, sports officials, building managers, and office assistants.

Career Planning and Placement Center

Bruce Laughlin, director
Holtz Hall
532-6506

Kansas State University is widely known for the outstanding career development services it provides, and the Career Planning and Placement Center is regarded as a regional and national leader in the field. Strong academic programs, capable students, and a campus work ethic combine to give KSU students a distinct advantage over those from many institutions in planning and achieving vocational/professional and graduate study goals.

Accessibly located, the Career Planning and Placement Center occupies all of newly renovated Holtz Hall, offering assistance to prospective freshmen, undergraduates, graduating seniors, graduate students, and alumni in matters of career planning and employment. The office provides a centralized placement system for all colleges and departments of the University, bringing together students, faculty members, and employer representatives seeking college-educated personnel. Services include employment vacancy referrals, data sheet and resume preparation assistance, interview workshops, career counseling, self-instructive video taping, and government/industrial employer interface workshops.

The center attracts hundreds of business and industrial recruiters to the campus each year for thousands of employment interviews. Students in curricula not regularly sought for on-campus interviews have access to equally valuable career counseling and guidance to develop job search strategies. Guidance is also provided for obtaining summer employment.

In addition to providing career exploration materials, the career library reflects current employment trends and opportunities in business, industry, agriculture, education, and government. A comprehensive collection of materials is maintained to assist students in assessing occupations, professions, and continuing education.

Career planning is facilitated through the use of SIGI—a computerized system of interactive career guidance and information that helps students in values clarification, the gathering of occupational information, and in the development of strategies for getting from the current situation to appropriate occupational and professional goals.

Auxiliary Services and Facilities

The Office of University Relations

Charles R. Hein, director of communications
112 Anderson Hall
532-5942

Public information for all KSU activities and events is coordinated by the Office of University Relations.

The Office of University Relations includes four units: news, publications, photographic services, and community relations.

The news unit is the official outlet for all news materials, print and broadcast, relating to KSU policy and administration. News unit services are available to all KSU departments and activities. The news unit also publishes the University's official faculty-staff newsletter, *In-View*.

The publications unit is responsible for coordinating all publications bearing the University's name. Services, which are available to all KSU departments and activities, include editing, layout and design, copyfitting and printing supervision.

Photographic services include photoprocessing, photography on location, slide reproduction, and photographic support for University-sponsored activities.

Affirmative Action Office

Dorothy L. Thompson, director
214 Anderson Hall
532-6220

The Affirmative Action Office is available to students on matters of equal opportunity in all areas including admissions, access to programs and activities, and employment. The University is committed to a policy of equal educational opportunity regardless of race, sex, religion, national origin, or handicapped status. Any barriers that students encounter for these reasons should be discussed with this office so that we may aid in their removal.

Speech and Hearing Center

Lillian C. Larson, director
107 Leasure Hall
532-6879

The Speech and Hearing Center provides evaluation, management, and consultation services. Services are extended to University students with articulation, fluency, voice, language, or hearing impairments. These clinical services are also available to children and adults of the surrounding communities. A purpose of the center is to provide educational and clinical experiences for students who are preparing for careers in speech-language pathology and audiology. Students may call for information or may be referred by instructors. The Speech and Hearing Center is located in Leasure Hall. For further information, call 532-6879.

The Family Center

Stephan R. Bollman, director
Ellen Richards Lodge
532-6984

The Family Center provides applied educational experiences to students while offering family-related educational outreach, counseling, and consultation services to the Manhattan community and statewide. Sponsored by the College of Home Economics, the Family Center provides an interdisciplinary focus with support from departments within the college.

Under supervision by faculty members, students offer services involving: marriage and family therapy, which may include assessment and consultative interviews, pre-marital, marital, divorce, and family counseling; family life education, emphasizing educational and preventive information; financial counseling and education; nutritional counseling and consultation; and clothing construction consultation. Affiliated programs include the Friendship Tutoring Program for school-age children, and sponsored grants such as the Statewide Training Program for Foster Parents, as well as resource and referral services. Special workshops address particular family topics including: working parents, parenthood education, and strengthening family life.

Services are available to students and the general public. Some programs charge a fee based on a sliding scale.

The Family Center, located in Ellen Richards Lodge, is open 8:00 a.m.-5:00 p.m. Monday-Friday. For further information call 532-6984 or 776-6566.

University Press of Kansas

Fred M. Woodward, director
Lawrence, Kansas
KANS-A-N 564-4154

Kansas State University, in association with the other five Regents' universities, operates and supports the University Press of Kansas for the purpose of publishing scholarly and regional books on a nonprofit basis. KSU joined the consortium in 1967 when the press was officially recognized by the Kansas Board of Regents. Until mid-1982, the operation was known as the Regents Press of Kansas.

The University Press of Kansas is the first American university press to operate as a statewide consortium under the specific sponsorship of all the state's universities. A member of the Association of American University Presses since its founding in 1946, the press has published over 300 titles, with some 135 currently in print. Its ongoing American Presidency Series, with ten titles issued to date, has been praised as "one of the most interesting and rewarding historical series in this country."

The press is governed by a board of trustees, who are the chief academic officers of the sponsoring institutions and who appoint two members and two alternates for each faculty to serve on the advisory Editorial Committee. The press offices are at 303 Carruth, Lawrence, Kansas 66045, and the KANS-A-N telephone number is 564-4154.

KSU Police Department

University Police Department is responsible for the protection of all properties owned or operated by the state educational institution or its affiliates. This authority is granted under state law. While service to the KSU community is of great concern to the department, the prevention of crime and investigation of all reported crimes is also of prime importance.

Additionally, parking and traffic control are a part of the overall responsibility delegated to KSU Police Department, A parking information booklet is available, and in part states: "All motor driven vehicles, except mopeds, parked on University property must be identified with a University

parking permit or a guest permit. Permits may be purchased at the KSU Police Department. Driving and parking of motor vehicles are governed by regulations established by a student-employee Traffic and Parking Council, by authority of K.S.A.—74:3211."

Postal Service

All mail for students must be addressed to their Manhattan residences, not the University.

Manhattan Post Office personnel deliver U.S. mail directly to University buildings and residence halls and pick up outgoing U.S. mail from various locations on the campus.

The University Postal Center in Anderson Hall sells stamps, money orders, and other postal supplies; weighs, insures, and registers mail; and receives outgoing U.S. mail. A self-service postal unit is in the K-State Union.

Research, Extension, and Outreach

Research Resources

Library system

Brice Hobrock, dean of libraries
Farrell Library
532-6516

The University Libraries provide research library support for the educational, research, extension, and public services objectives of Kansas State University. The libraries' staff is responsible for acquiring, developing, maintaining, and preserving collections of library materials suitable to the total program requirements of the University. Librarians at KSU are dedicated to organizing, promoting, and interpreting the collections to the University community and to the citizens of Kansas.

Farrell Library, named after Kansas State University's eighth president, Francis David Farrell, is the central unit of the University library system. It is supplemented by four specialized subject libraries in other buildings. These branch libraries are architecture and design (Seaton Hall), chemistry (Willard Hall), physics (Cardwell Hall) and veterinary medical (Veterinary Medical Teaching Building).

The University Libraries contain approximately 920,000 volumes and that number is increasing at an annual rate of about 30,000 volumes. Current journal subscriptions number over 7,000 with an additional 2,000 subscriptions to other serial publications. In addition to the volumes cataloged according to the Library of Congress Classification, the libraries contain a document depository collection of United States government publications that numbers nearly 600,000; about 100,000 maps; a complete, archival collection of ERIC (Educational Resources Information Center) documents; a Curriculum Materials Collection of around 10,000 items; and 1.9 million pieces of microforms. Audio-visual materials number approximately 30,000 items and include sound recordings, tapes, slides, and printed music scores. A collection of over 200 newspapers is maintained from Kansas communities, major U.S. cities and from other countries.

Specialized Collections and the University Archives contain a variety of old, rare, and unusual books, manuscripts, and other materials that must be protected and accorded special treatment because of their value and condition. The archives offers an assortment of published and unpublished material, including photographs, documenting the history of Kansas State University. The Minorities Resource and Research Center is a special collection of materials by and about blacks, Hispanics, and native Americans. The Juvenile Literature Collection numbers about 10,000 volumes of children's books and is used primarily by students in teacher education.

The Reference/Information Services Department, located on the first floor of Farrell Library, is the service center of the system and provides traditional reference service as well as computerized information retrieval from over 150 databases. This department is staffed by a group of librarians who are available

to help students, faculty, and others find the information they need. The card catalogs are located in this department.

Other areas of Farrell Library containing collections and providing services are Reserves (basement), the Periodicals Reading Room (second floor), Government Documents Department (third floor), and the Microforms Reading Room (fourth floor). Special Collections/University Archives and the Audio-Visual Department are located on the fifth floor. The Minorities Center is located on the fourth floor of old Farrell. Resources on Developing Countries, located on the third floor of old Farrell, provides research information about developing countries in support of KSU international programs. The technical services departments are located on the first floor and include Acquisitions, Cataloging, Circulation, and related computerized operations.

Library Instructional Services, located on the second floor of old Farrell, offers a variety of services to help students acquire and develop skills in using the library through orientation tours and classes.

To take advantage of the library resources in the region, the libraries, through the Interlibrary Loan Department located on the second floor, operate a courier service which travels twice a week east to Topeka, Lawrence, and Kansas City and twice a week south to Emporia and Wichita. In addition to collections at the libraries of Regents' institutions, the vast scientific holdings of the Linda Hall Library in Kansas City are available. The six state-supported institutions of higher education belong to a computerized national network for cataloging and interlibrary loan. They also permit direct borrowing by students and faculty. The libraries are a member of the Kansas Information Circuit, a network of the larger public and system libraries of the state.

University Computing Facilities

Tom L. Gallagher, director
10 Cardwell Hall
532-6311

Computing services for instruction and instructional support activities in the fields of research, administration, and public service are provided by the University Computing Facilities. These services also are available to other public and private educational institutions. Statewide computing efforts are fostered among the Board of Regents' many educational institutions. The University Computing Facilities are organized into two centers—the academic Computing Center and the administrative Data Processing Center.

Computing Center. This center supports the instructional and research activities of the faculty, staff, and students. The professional staff provides assistance in the use of hardware and software. Manuals, text, publications, the *Newsletter*, and other materials are available in the User Information Center located in Cardwell Hall. In addition, manual racks are maintained in several locations on campus.

The computer for this center is a National Advanced System 6630 with twelve megabytes of main memory and 4.0 billion bytes of associated direct-access storage. Supporting peripheral equipment includes tape drives, card readers, a card punch, line printers, low-speed interactive terminals, remote-job-entry stations, an incremental plotter, and card processing equipment. Three Remote Computing Laboratories are located on the campus and provide direct access to users for fast turnaround of user-written batch jobs in WATBOL, WATFIV, PLC, and ASSIST.

Programming languages on the system include FORTRAN, COBOL, PL/1, APL, SPITBOL, PASCAL, and Assembler. Generalized applications packages for statistical and simulation tasks are available using SPSS, SAS, BMD, GPSS/H, and CSMP. The Conversational Monitor System (CMS) is the interactive system that supports communications terminals using BASIC, SCRIPT, VS Assembler, and WATFIV. Non-credit courses are taught periodically to assist users to more fully utilize the capabilities of the computer and its program environment.

Data Processing Center. This center supports the administrative community of the University. Services consist of application systems, programming, operational, and data entry functions provided by the staff of the center on a closed-shop basis. Some of the computerized processing services performed directly for the student community are registration, personnel changes, payrolls, billings for student health, alumni/foundation system, and the concessions of the K-State Union.

The computer for this center is an IBM System 4341 Group 2 with eight megabytes of main memory. Supporting equipment to this machine includes disk and tape drives, card reader, card punch, line printer, and card processing equipment. COBOL is the programming language.

Particle accelerators

Patrick Richard, director
112 Cardwell Hall
532-6783

Kansas State University, in cooperation with the U.S. Department of Energy, operates a major facility for the acceleration of atomic particles, particularly heavy ions. There are several accelerators associated with this facility including a 6 MV tandem Van de Graaff accelerator supported by a Scorpio System PDP-11/34A computer and a PDP-15 computer, both operated online. There is also a 3 MeV high-current Van de Graaff accelerator as well as two low-energy, high-current accelerators. The accelerators provide the University and the state of Kansas with particle accelerator capabilities over an unusually large range of projectiles and energies up to 55 MeV.

These accelerators are housed in Cardwell Hall. A professional staff and graduate students maintain an active research program which addresses problems in atomic physics related to the development of fusion energy as well as problems in heavy-ion nuclear physics and solid-state physics. For further information concerning this facility, write to the Director, J.R. Macdonald Laboratory, Department of Physics, Cardwell Hall, Manhattan, Kansas 66506.

Nuclear reactor

Richard E. Faw, director
127 Ward Hall
532-5963

Another major scientific facility is the TRIGA Mk II nuclear reactor and related equipment. In addition to basic research involving neutron spectroscopy and neutron cross-section studies, the Reactor Laboratory affords the entire University community neutron activation analysis capabilities for sensitive, non-destructive analysis. For further information, write the Director, Reactor Laboratory, Department of Nuclear Engineering, Ward Hall, Manhattan, Kansas 66506.

Biological research facilities

Terry Johnson, director
232 Ackert
532-6615

Konza Prairie Research Natural Area is an 8,616-acre area within a few miles of the University that is dedicated to ecological research by the Division of Biology and the Kansas Agricultural Experiment Station. This nationally important research facility provides an opportunity for basic research on the prairie and for baseline information needed to assess the nature and magnitude of the ecological changes resulting from human activity.

The Center for Basic Cancer Research offers numerous educational and research opportunities. Each year the center offers research awards to allow deserving undergraduate students an opportunity to participate in cancer research that is ongoing in the Division of Biology. The Anti-Cancer Drug Laboratory, a new and unique research facility that opened during the 1982-83 academic year, will allow students to focus research on anti-cancer compounds—determining the mode of action of these compounds, their molecular action, the reasons for their toxicity, and the reasons why some cancers have developed a resistance to them. The Anti-Cancer Drug Laboratory is an integral part of the Center for Basic Cancer Research in the Division of Biology, and it will allow for the training of basic cancer research scientists.

Other facilities include the Kansas State University Herbarium with a complete monographic library, a research and reference collection of insects in the Department of Entomology, greenhouses, aquatic and terrestrial research laboratories, animal quarters, controlled environmental chambers and many pieces of specialized field and laboratory research equipment.

U.S. Grain Marketing Research Center

The center has four research units: 1) grain structure, composition, and characterization; 2) biology of insects and microorganisms in stored grains and cereal products; 3) engineering; and 4) grain quality and end-use properties. Its laboratories include a pilot plant, a grain elevator, and facilities for biochemical, microscopic, milling, and baking research.

Other research facilities

A wide variety of specialized facilities is maintained to support research and scholarly work in the humanities, natural sciences, applied sciences, social sciences, and professional areas. Although an exhaustive listing is prohibitive, the following represent a selection of such supporting resources:

Editorial offices of major journals in history, English, economics, horticulture, education, modern languages, and school food service
Scanning electron microscope
Transmission electron microscope
Nuclear magnetic resonance spectrometers
Recording Raman spectrometer
X-ray diffractometers
Population and demographic laboratory
Statistical laboratory
Heliodon and wind tunnel
Wind and soil erosion laboratory
Controlled environment test facility
Audio visual materials center
Experimental animal facilities
Data banks of the Consortium for Political Research
Arp electronic music synthesizer
Laboratory for physiology of exercise
Glassblowing and instrument shops
High power, pulsed nitrogen laser
Continuously tunable lasers
Fourier transform spectroscopic laboratory
Interior architectural shops
Near infrared protein laboratory
Soil testing laboratory
Textile chemistry laboratory
Weather data laboratory
Evapotranspiration laboratory
Veterinary diagnostic laboratory
Plant disease diagnostic laboratory

Agricultural Experiment Station

John O. Dunbar, director
Kurt C. Feltner, associate director
Stanley E. Leland, Jr., associate director
Steve C. Morgan, editor
Eileen K. Schofield, associate editor
Cheryl May, assistant editor
Fred Anderson, graphic artist

115 Waters Hall
532-7137

The Kansas Agricultural Experiment Station is supported by both federal and state funds. Each session of the Kansas legislature and each session of the U.S. Congress provide funds to operate the experiment station. Fees and commercial organizations also provide some support, as do sales of experimental crops and animals.

The mission of the Agricultural Experiment Station is to conduct original research to ensure and enhance the capability of agriculture in its broadest sense to provide adequate food and fiber, improved rural living, and human nutrition for present and future generations.

The Kansas Agricultural Experiment Station, with headquarters in KSU's Waters Hall, currently is operating on an annual budget of about $24.9 million. Research is performed both on campus and off campus (a total of approximately 12,000 acres, state-owned or leased, is involved), and researchers have access to laboratories and scientific equipment. More than 30 departments in six of the University's colleges are involved. Also, the station is a strong ally of the Graduate School; interested graduate students are encouraged to seek research assistantships to supplement their study programs.

Departments of the Agricultural Experiment Station are, by college: Agriculture: agricultural economics; agronomy; animal sciences and industry; entomology; forestry; grain science and industry; horticulture; plant pathology. Arts and sciences: biochemistry; biology; chemistry; computer science; economics; geography; geology; mathematics; physics; political science; sociology, anthropology, and social work; statistics. Business administration: management, marketing. Engineering: agricultural engineering, chemical engineering, civil engineering, electrical engineering, industrial engineering, nuclear engineering. Home economics: clothing, textiles, and interior design; family and child development; family economics; foods and nutrition; and dietetics, restaurant and institutional management. Veterinary medicine: diagnostic laboratory, laboratory medicine, pathology, anatomy and physiology, surgery and medicine.

Off-campus research is centered at five branch stations—Colby, Fort Hays, Garden City, Southeast Kansas, and Tribune—and 11 experiment fields located in various parts of the state. (See section on off-campus research.)

Research by scientists in the experiment station is organized into more than 600 projects, which cover nearly all phases of agriculture and related industries. Among projects in progress are those concerned with physiology and nutrition of plants and animals; water resources, with special attention to conservation and distribution of available water for irrigation and other agricultural uses; feeds for livestock; production, maintenance, and use of farm machinery and equipment; sociological problems; community development; and home economics, with emphasis on food science, human nutrition, family living, and institutional management.

Results of research are published in scientific journals; in station bulletins, pamphlets, reports of progress, research papers, and reports at field days and other special events; and in popular journals and news releases to the press and radio and television stations. (Inquiries about or requests for station publications, copies of which are available free or at minimal charge to citizens of the state, should be sent to the Distribution Center, Umberger Hall, Kansas State University, Manhattan 66506.)

Off-campus research: at branch stations and experiment fields

Fort Hays Branch Station
W.M. Phillips, head and professor

Professors Brethour, Hackerott, Harvey, and Launchbaugh; Associate Professor Stegmeier; Assistant Professors Baxter, Martin, Seifers, Stahlman, and Thompson.

The oldest and largest of the branch stations, Fort Hays Branch Station (south of Hays in Ellis County), was organized in 1901, after the state legislature provided for its organization and appropriated funds for its operation. The station owns 3,260 acres, and 465 acres are leased from Fort Hays State University. Some research is cooperative with that university.

Investigations are primarily related to problems peculiar to the western half of the state, where rainfall is limited. They include beef grazing, feeding, and breeding studies; crop improvement, with special emphasis on wheat, sorghum, legumes, and grasses; soil management; weed control; and insects as related to crops and livestock.

Garden City Branch Station
G.M. Herron, head and associate professor

Professor Greene; Assistant Professors Buschman, DePew, Hooker, Lee, Norwood, and Witt.

A 99-year lease from the Finney County commissioners to the State Board of Regents beginning June 14, 1907, provided 320 acres for agricultural research. Additional adjoining tracts totaling 235 acres were purchased in 1937 and 1939. An 80-acre irrigated tract (made available by the Garden City Company) was leased in 1948, and a 319-acre tract was leased in 1977.

Current investigations involve extensive irrigation research, livestock feeding, dairying, dryland soil management, crop improvement, weed control, horticultural and specialty crops, insect control, and soils and fertilizer relationships. One of the two state soils laboratories is located at the Garden City Branch Station. The other is at Manhattan.

Colby Branch Station
Larry D. Robertson, head and associate professor

Associate Professor Lawless; Assistant Professors Schwulst and Sunderman; Instructor Lamm; Emeritus Professor Banbury.

Provided for in 1913, the Colby Experiment Station began operating in 1914. Currently it occupies 759 acres. Major areas of research are crop improvement; soil and crop management; irrigation; sheep production; and adaptation of fruit and shade trees, shrubs, and flowers in northwestern Kansas.

Tribune Branch Station
R.E. Gwin, Jr., head and assistant professor

Instructor Bourne.

The Tribune Branch Station was established in 1911 by an act of the Kansas legislature. The main tract consists of 110 acres, and in 1981 an 80-acre tract in northeastern Greeley County was purchased for irrigation research.

At the Tribune station experimental work is conducted for the benefit of the surrounding western territory. Special attention is paid to the problems of producing field and specialty crops under conditions of limited rainfall and under irrigation.

Southeast Kansas Branch Station
R.J. Johnson, head and professor

Assistant Professors Lomas, Moyer, and Sweeney; Instructors Dougherty and Kelley.

The Southeast Kansas Branch Experiment Station in Labette County was established in 1949. The station operates a total of 938 acres, 764 acres of which are owned and 174 leased (including 49 at Columbus, 120 at Mound Valley, and 5 at Parsons).

Soil studies in relation to yield and quality of crops, field crop investigations, dairy cattle production, beef cattle investigations, and extensive forage research are being conducted at this station.

Experiment fields and irrigation development farms

The Kansas Agricultural Experiment Station includes 11 experiment fields of from 20 to 320 acres each. Five are operated by the KSU Department of Agronomy. They are on different soil types and under different climatic conditions. Three fields are supervised jointly by the KSU departments of agricultural engineering and agronomy and include irrigation studies. Fields (most leased) are Cornbelt (Powhattan), North Central Kansas (Belleville), Irrigation (Scandia), Sandyland Irrigation and Dryland (St. John), South Central Kansas (Hutchinson), Harvey County (Hesston), East Central (Ottawa), Kansas River Valley Irrigation (Topeka: Rossville and Silver Lake).

Experimental work is devoted to horticultural and forest crops at three fields: Horticulture Research Center (Wichita), Pecan Experiment Field (Chetopa), and East Central Horticulture Field (De Soto).

Special agencies affiliated with the Agricultural Experiment Station

The Kansas Water Resources Research Institute

Floyd W. Smith, director

Cooperating with the Water Resources Institute, University of Kansas

Established the same year that Congress passed the Water Resources Act (1964), the Kansas Water Resources Research Institute has a double charge: to conduct both basic and applied research on water use and to train scientists in areas related to water resources. By Regents' stipulation, representatives of Kansas State University (Manhattan) and The University of Kansas (Lawrence) participate in institute policy making and research. The institute may support water resources research in any department of either university—toward the end of providing maximum benefit to Kansans. Research is focused on finding the most effective ways of conserving, using and distributing available water for the greatest benefit of today's and tomorrow's citizens.

Evapotranspiration Laboratory

Edward T. Kanemasu, research leader

How to organize crop and soil management systems to provide efficient use of water resources has been a main commitment of the Evapotranspiration Laboratory since its establishment by the Kansas legislature in 1968. In carrying out that commitment, laboratory scientists are studying processes of water use by evaporation from the soil and transpiration from the plant (evapotranspiration). These studies include such measurements as water movement in soils, plant photosynthesis, leaf temperatures, leaf area, solar radiation, air temperature, precipitation, and relative humidity. Graduate student studies are supported by the laboratory and supervised by the staff in an effort to train scientists who will know the basics of efficient use of water in agricultural production.

The Food And Feed Grain Institute

C.W. Deyoe, director

The Food and Feed Grain Institute has these major goals: to develop effective methods of milling and processing grains; to evaluate and improve the quality and nutritional properties of food grains; to find new uses for grains; and to improve the handling, transporting, storing, and domestic and international utilization of grains and grain food products. Institute scientists are faculty of the Department of Grain Science and Industry, members of other University departments, and personnel of other agencies like U.S. Grain Marketing Research Center.

International Grains Program. Established in 1978, with funds provided by the Kansas legislature, the International Grains Program is intended to promote the marketing of wheat, corn, soybeans, sorghum, and other U.S. grain commodities. As a part of the effort to expand existing markets and to develop new ones for those agricultural commodities, progam participants are trained in the processing and handling of U.S. food and feed grains, instructed in the use of the end products, and provided information on the U.S. marketing system.

The Statistical Laboratory

A.D. Dayton, director

This laboratory, established in 1946 and administered by the Department of Statistics, is especially equipped and staffed to serve scientists associated with the Agricultural Experiment Station. Both consulting and computational services are available.

Other general services

Chemistry laboratories available to station researchers include those used primarily for research on feed stuffs (animal sciences and industry) and grain protein (grain science and industry) and for soil testing (agronomy and Garden City Branch Station). The scanning electron microscope maintained by the Department of Entomology is used increasingly by station scientists for particular projects. Other services are provided by the Weather Data Library (physics), Plant Diagnostic Laboratory (plant pathology), Population Research Laboratory (sociology, anthropology, and social work), and Veterinary Diagnostic Laboratory.

Division of Cooperative Extension

Fred D. Sobering, director
123 Umberger Hall
532-5820

The basic mission of extension is to deliver informal, out-of-school, non-credit educational programs that help people solve their problems. These programs are based on up-to-date research and practical applications of knowledge conducted by this and other institutions. Thus, extension is people, problem, and progress oriented.

The Cooperative Extension Service provides an important learning bridge between the University and the people of the state. It takes scientific knowledge, principles, and practices that bear directly on the grass roots problems of people in all corners of the state. At the same time, this unique information delivery system brings back requests for new knowledge to the research staff at the University.

Basis for cooperative title. The Cooperative Extension Service is so named because the federal, state, and county governments cooperate with local people in planning, conducting, and financing a county-wide educational program.

Kansas State University represents the state in this system through the Division of Cooperative Extension. The United States Department of Agriculture represents the federal government. The County Extension Council and the Board of County Commissioners, elected by the voters, represent the county.

Since its charter is broad, extension's educational programs must be broad in scope and directed to all population segments that have concerns relating to the four major program areas—agriculture, home economics, 4-H youth, and community resource development.

Changing conditions continually enlarge and modify the emphasis on subjects relating to the major program areas. An increasing number of departments within the nine colleges of the University contribute knowledge to support the expanding programs of cooperative extension.

The audience for extension efforts now includes urban and suburban people, as well as the farm families for whom the original programs were designed. Extension specialists now recognize their charge to share new knowledge with all people, and thus keep their programs progressive, popular, and personal.

Extension takes the University to the people. To achieve the basic goal of taking the University to the people, the Cooperative Extension Service helps maintain a County Extension Office, operated by off-campus KSU faculty members, in all 105 Kansas counties.

These county agents are teachers, organizers, educational advisors, and consultants who bring relevant programs to bear on the problems identified by the people in their counties. To literally thousands of people, these extension agents are a constant channel for communicating with Kansas State University.

Extension brings people to the University. Extension agents acquaint many people with the work of the University by organizing and conducting group visits to the University and its branch experiment stations and fields. Many statewide organizations in agriculture, home economics, and 4-H club work are given assistance with annual conferences at the University. Included in this educational work are the various breed, seed, and feed associations; the Kansas Home Economics Advisory Council; and the 4-H Youth Conference.

Extension stimulates community action. Extension workers may assist persons to work together as a group for common goals such as organizing countywide campaigns to control diseases, pests and weeds; conserve soil and moisture in an entire watershed; and study many different kinds of local, state, and national problems. They help conduct fairs and teach good standards of production in agriculture and home economics by serving as judges at county and state fairs.

Extension teaches in many ways. The methods of instruction used by extension workers are quite informal. Information on specific problems may be given through meetings, workshops, direct and media information flow, consultations, and demonstrations.

Extension agents also are specialists in training individuals who in turn train others, either individually or in groups. These public-spirited lay leaders often become, in effect, assistant instructors without pay.

Extension specialists are off-campus teachers. Highly trained specialists are stationed at the University and in area offices throughout the state. These specialists assist the county extension agents by helping individuals consider problem-solving alternatives. They also apprise the county extension agents of new developments in research.

The role of the extension specialist is to interpret research developed by the state agricultural experiment station and USDA, to help county agents demonstrate the feasibility of applying new research through practical demonstrations, and to discover problems confronting the people of the state on which further research is needed.

Extension links people to educational programs. The county extension agents, as official representatives of the United States Department of Agriculture, are responsible for making people aware of educational programs affecting agriculture, family living, youth, community development, and related areas. The agents serve as a local source of information regarding programs of many other governmental agencies, such as the Soil Conservation Service, Rural Electrification Administration, Farm Credit Administration, and Agricultural Stabilization and Conservation Service.

Department of Extension Information

Gary L. Vacin, head of department

Professors Graham and Vacin; Associate Professors Daly, Jorgensen, Medlin, Peck, and Sullins; Assistant Professors Buchanan, McGlashon, Pray, and Ward; Instructor Collentine; Emeriti: Professors Thomas, Unruh, and Warner; Associate Professor Dexter; Assistant Professor Tennant.

This department provides communications support for the Cooperative Extension Service, with emphasis on the print media. One major objective is to prepare and transmit educational material to the people of the state about extension service programs and Agricultural Experiment Station research. This includes the responsibility of reporting to all people of Kansas new developments and recommendations in agriculture, home economics, 4-H and youth work, public affairs, and community and rural development. All means of communication are utilized in disseminating information for the benefit of all Kansas residents.

Scientific information, as written or produced in popular version by department staff, is channeled through all appropriate means of communications, including newspapers, magazines, publications, circulars and posters, printed annual reports, exhibits, slides, radio, and television.

The state's weekly and daily newspapers and various state, regional, and national magazines are provided news stories and photographs about the activities of the Kansas Cooperative Extension Service and research work of the Kansas Agricultural Experiment Station.

County extension agents are provided a weekly press service and are given special training throughout the year in using a balanced information program. The department cooperates with agents in all 105 counties, specialists in the five area extension offices, and the state office in planning and executing information programs.

A second major objective is to support all extension departments by providing general editing and printing services related to publications, educational literature, reports, records, forms, and office supplies.

Areas of emphasis include:

—Providing the editorial support for developing and printing extension publications designed to support ongoing educational programs.

—Offering editorial assistance to all specialists in preparing their training literature, reports, proposals, and other written communications.

—Operating a duplicating center to provide the rapid reproduction services needed to meet small quantity and short notice demands for program support.

—Maintaining a distribution center as an efficient means of circulating extension and experiment station publications, handling office supplies for state and area specialists, and consolidating mail services.

A third major objective is to operate an instructional media center that makes a variety of audio-visual equipment and related services available to extension personnel. A library of motion pictures and slide sets for visual instruction is maintained for use by county agents, and area and state extension

specialists. Planning, designing, and preparing audio-visual materials and artwork for specialists working on priority extension programs is an important phase of work in the department.

Department of Extension Radio-Television-Film

Jack M. Burke, head

Professors Burke and Titus; Associate Professor Wright; Assistant Professors Baker, Kuehn, and Nelson; Instructor Ballou.

This department provides mass communications support to all areas of the Cooperative Extension Service. In radio it administers and programs KSAC, an institution-owned, public radio station which is on the air from 12:30 p.m.-5:30 p.m., Monday through Friday on 580 Hz. Station KSAC is used exclusively for the dissemination of information and cultural programming.

The K-State Radio Network is both a live and audio tape service to Kansas commercial radio stations with over 20,000 tapes distributed each year. Subjects include agriculture, ecology, home economics, and public affairs.

Script services on agriculture and home economics are sent to commercial radio stations, county agents, newspapers, and farm magazines. County agents are given assistance in planning local radio and television programs.

Live or taped programs are arranged for extension service and other University staff members for use on local Kansas stations.

Daily television programs showing results of research and demonstrations are planned and presented on cooperating television stations. Special television training is provided for extension and other University staff members who appear on television.

Motion pictures for the University and off-campus groups with educational objectives are produced on a fee basis.

Extension agricultural programs

Hyde S. Jacobs, assistant director, professor

Specialists in several departments of the colleges of agriculture, engineering, and veterinary medicine offer direct educational and technical assistance to Kansas citizens throughout the state.

Departments have extension faculty who plan, conduct, and evaluate off-campus programs in their respective subject matter areas. These specialists organize educational information, prepare support materials, and make presentations in counties upon request from county agents.

In addition, extension offers interdisciplinary programs in four areas:

Food, feed, and forage production enhances sound production practices, good business management, efficient use of labor, and rapid adoption of new technology in food, feed and forage production through application of physical, biological, and economic principles discovered through research and applied through an informal, adult education process.

Animal production and utilization provides for effective production and utilization of meat, dairy, and poultry products for the consuming public through the application of research and management principles in genetics, animal nutrition and management, environmental physiology, marketing, engineering, and veterinary medicine.

Resource use and conservation focuses attention on increasing need for pollution-free soil, water, and air in rural and urban settings; zoning and land use; and public affairs education. It also emphasizes proper management and conservation of fields, forests, water and natural resources used in production and recreation.

Farm business and financial management helps producers effectively manage their farm, forest, or range enterprises. Farmers need continued information about factors influencing markets as well as insight to enterprise organization, total business structure and procurement of supplies, labor, credit, and equipment in managing their business and financial affairs.

Extension Agronomy

George E. Ham, head of department
Verlin H. Peterson, state leader

Professors Bohannon, Ham, Kilgore, Nilson, Peterson, and Whitney; Associate Professors Ohlenbusch, Regehr, and Shroyer; Assistant Professors Fjell, Gatliff, Hickman, Lamond, and Mikesell; Instructor Bonczkowski; Emeriti: Professors Bieberly, Dicken, Edelblute, Jones, and Lind; Associate Professor Harper.

The Extension Agronomy department conducts a statewide educational program in agricultural crop production and resource conservation. The object of the program is to improve crop production efficiency, stabilize the agricultural economy through stable agricultural production, and conserve natural resources through the acceptance by the farm operators of proven production and conservation practices.

The responsibility of the agronomy specialists in this program is to interpret and disseminate the results of research conducted by the Agricultural Experiment Station and the United States Department of Agriculture, promote the adoption of proven practices, and inform the Agricultural Experiment Station of needed research. The agronomy specialists correlate their program with specialists in all other subject matter areas to ensure the most effective overall extension program.

Extension Animal Sciences and Industry

Don L. Good, head of department
Larry R. Corah, state leader

Professors Adams, Call, Corah, Dunham, Francis, Good, Schafer, and Zoellner; Associate Professors Brazle, Kuhl, Simms, and Spaeth; Assistant Professors Gibbs, Nelssen, Orwig, and Pollmann; Extension Assistant Olson; Emeriti: Professors Bonewitz, Jackson, McAdams, and Moyer.

Extension specialists in animal sciences and industry provide leadership for state programs in beef cattle, dairy cattle, horses, poultry, sheep, swine, meats, and dairy products. Programs are conducted in state areas and counties with producers and processors (both adult and youth) and the allied industries. These programs are planned in cooperation with clients, state, area, and county extension staff and are implemented cooperatively.

Extension Entomology

Robert G. Helgesen, head of department and state leader

Professors Brooks and Cress; Associate Professors Bauernfeind, Lippert, and Mock; Assistant Professors Bertholf, Higgins, and Sloderbeck; Extension Assistant Gibb; Emeritus: Professor Gates.

Extension Entomology is concerned with practical insect control measures for Kansas citizens. The proper, safe use of insecticides is one of the methods used by Kansas producers to prevent insect damage. Cultural and biological methods are also used where appropriate. Extension Entomology uses meetings, newsletters, and mass media to keep Kansas producers informed of populations of insects that may create problems. Pilot pest management projects are used to introduce and validate newer, integrated approaches to managing pest populations. The 4-H entomology project is designed to teach the interrelation of insects and the environment, as well as the identification of insects.

Extension Horticulture
Paul H. Jennings, head of department
Frank D. Morrison, state leader

Professors Marr and Morrison; Associate Professors Leuthold, Long, and van der Hoeven.

Programs in Extension Horticulture and landscaping are developed to serve persons interested in horticultural plants, including fruits, nuts, vegetables, flowers, turf, shrubs, and ornamental and shade trees. Special interests may include food products for commercial sales or personal use, or for environmental improvement or family gardens.

Assistance is available to suburban, urban, and rural homeowners; and to commercial producers, such as florists, nurseries, greenhouse operators, fruit, vegetable, and nut growers.

Programs are developed for public and private concerns, such as park departments, schools, cemeteries, municipalities, highway departments, industrial parks, and golf clubs. Youth education programs also are developed relating to the understanding and use of horticultural plants.

Information developed includes selection, production, use and maintenance of the various horticultural plant materials. Assistance is available in every Kansas county and is conducted in a variety of ways, including training schools, workshops, demonstrations, publications, slides and scripts, news releases, radio and television programs, and personal contact.

State and Extension Forestry
A. Jay Schultz, state and extension forester and head, Department of Forestry

Professors Biswell, Grey, Naughton, Nighswonger, Schultz and Strickler; Associate Professors Aslin, Atchison, Bratton, Gould, Loucks, Moyer, Pinkerton, and Rowland; Assistant Professors Blair, Bruckerhoff, Kunkel, and Strine; Emeritus: Professor Gallaher.

This department is responsible for all state and extension forestry programs in Kansas. The foresters provide direct technical assistance to landowners in all forestry and forestry-related areas. Landowners receive assistance in management and marketing of their timber.

Assistance also is given in various types of conservation tree and shrub planting. A tree distribution program provides approximately one million low-cost seedlings each year for these conservation-type plantings.

A seed orchard for growing superior walnut and cottonwood planting stock is located near Milford Reservoir.

Foresters work closely with wood-using industries in the state to improve utilization of the timber crop.

The department also operates a Cooperative Rural Fire Control program. Assistance is given to rural fire districts in organizing, planning, obtaining fire equipment, fire prevention, and training fire district personnel.

Through contracts with the Corps of Engineers and the Bureau of Reclamation, the department develops vegetative management plans for public use areas around reservoirs. The department is responsible for implementing these plans through tree planting, grass seeding, and recreational timber stand improvement.

Through a Community Forestry Program, assistance is given to Kansas towns with the development of management programs for street, park, and other public trees.

The forestry offices are at 2610 Claflin Road in Manhattan. In addition to the administrative offices other facilities at this location are tree distribution, cold storage, greenhouse, and shop. Paneling of twelve Kansas hardwood species is on display in the building. Area forestry offices are in Chanute, Garden City, Hays, Hutchinson, and Manhattan.

Extension Plant Pathology
Fred W. Schwenk, head of department
William G. Willis, state leader

Professors Schwenk and Willis; Associate Professor Crowe; Assistant Professor Tisserat; Instructor Houfek; Emeritus: Professor King.

The purpose of the work by extension specialists in plant pathology is to keep the people of Kansas informed about the occurrence and nature of plant diseases and economic means for their control. This includes diseases of field crops, vegetables, fruits, trees, flowers, lawngrasses, and shrubs.

The specialists, working with the county extension agents, furnish plant disease information to rural and urban people by news articles in local papers, radio, television, meetings, field and home visits, and office and phone calls.

The extension specialists are responsible for the plant disease diagnostic laboratory which provides a service for those individuals who have a need for identification and control recommendations for plant diseases. During 1983, 1,238 plant specimens were diagnosed. This service enables the cooperators to keep abreast of the latest developments in effective chemical recommendation and to utilize those materials that are currently registered for use.

Extension Veterinary Medicine
Homer K. Caley, state leader

Professor Caley; Associate Professor Breeden.

Extension Veterinary Medicine serves all facets of companion animals and the livestock industry including veterinarians as a source of scientific material pertaining to the most recent information on disease prevention and control. Current research is evaluated and adapted for use in these areas.

Research projects, field trials, and surveys are implemented into the work program so that our livestock interests are provided with actual test results as conditions exist on Kansas farms and ranches.

Extension Wildlife Damage Control
F. Robert Henderson, state leader

Professor Henderson; Assistant Professor Andelt.

The funetion of this section is to earry on an edueational program throughout the state dealing with applieation of wildlife damage control methods that will minimize eonfliet between man and wildlife.

The work is based on attitudes whieh reeognize that all speeies of wild animals are an important part of the environment in whieh we live, and that all species of wild animals have both negative and positive social and eeonomic values. Eneouragement is given to the use of techniques known to be of value in eounteraeting areas of confliet between humans and wildlife.

The work of this seetion is earried to every eounty in the state by eonduеting on-farm and in-town eonsultations. Reeords are kept and in eaeh ease efforts are made to determine the aeeurate cause and extent of eeonomic loss. Speeialists provide advice for prevention of further losses, and give eontrol reeommendations and demonstrations of equipment on an individual basis where damage has oeeurred.

Counsel is given on proper and up-to-date wildlife damage control proeedures of animals such as rats, miee, moles, gophers, eoyotes, sparrows, starlings, pigeons, or other non-game speeies. Information is disseminated by radio, television, and printed educational materials.

Extension Agricultural Engineering
Charles K. Spillman, head of department
James P. Murphy, state leader

Professor Jepsen; Assoeiate Professors Blaek and Murphy; Assistant Professors Harner, Kuhlman, Pacey, Powell, and Rogers; Instruetors Welty and Ward; Emeriti: Professors Holmes, Stover, and Wendling; Associate Professor Sehindler.

The funetion of Extension Agrieultural Engineering is to earry on an educational program throughout the state dealing with applieation of engineering prineiples to various phases of agriculture. The work of this department is earried to every county in the state by demonstrations, institutes, training sehools, publieations, news releases, radio and television programs, and personal eontaets.

The department eonduets edueational programs throughout the state in subject matter fields such as the control of soil erosion; the development, conservation and utilization of water resourees; irrigation systems and water management; animal waste management and water pollution eontrol; the loeation, layout, and design of livestock produetion plants; seleetion, maintenanee, and operation of farm maehinery; systems for handling, sorting, eonditioning, and proeessing grains and feeds; the seleetion, installation, and use of eleetrieal power on the farm and in the home; and the design and development of improved housing for all Kansas families.

The department eonduets a safety program in all subjeet matter areas. The department also assists with the development and planning of 4-H Club programs whieh relate to the engineering phases of agrieulture.

Much of the work is eonducted in cooperation with the county extension office in eaeh eounty. The remaining work is done in eooperation with various governmental ageneies, the manufacturers and distributors of supplies, equipment, and maehinery used on the farms, other groups or organizations whieh serve agrieulture, eleetrieal power suppliers, state offieials, and regional and national professional groups.

Extension Agricultural Economics
Milton L. Manuel, head of department
Donald B. Eriekson, assistant head

Farm Management
Professors Figurski, Flinchbaugh, Langemeier, Manuel, and Sehlender; Assoeiate Professors Barnaby, Brandsberg, Fausett, MeReynolds, Parker, and Pretzer; Assistant Professors Krause and Overley; Instruetors Allen, Beeeh, Collins, Crawford, Dawson, DeLano, Diekson, Everson, Faidley, Freeze, Germann, Hackler, Herod, Husehka, Janke, Lisee, Miller, Rempe, Sehwarzentraub, Smith, Sturdevant, Stucky, Ward, Williams, and Wilken; Emeriti: Professors Coolidge, Thomas, and Whitehair; Assistant Professor Treat; Instruetors Greene, Hageman, McClelland, Means, and Mullen.

The extension edueational program in farm management is divided into two areas: Kansas Farm Management Association Programs, and Area and State Farm Management Programs.

In the Kansas Farm Management Assoeiation Program, the 29 area extension eeonomists, farm management (fieldmen), conduet an intensive edueational program with 4,450 Kansas farm families via the County Extension Couneil in the six farm management assoeiations. Eaeh fieldman eonduets a person-to-person educational program in farm management with 120 to 150 farm units. This program involves at least two fieldman visits to the farms for eounseling, a visit in November and Deeember for tax management purposes, county summary and analysis meetings, county fall erops and livestock forward planning meetings, individual summary and analysis of the farm and household record, special field days or tours, publie tax management schools, and estate planning.

The program provides Kansas State University with a field laboratory and representative sample of farms for obtaining information important in eonduеting researeh and extension edueational programs.

This sample of Kansas farms provides the foundation for development of publieations and edueational materials for the entire Kansas agricultural industry. In addition, each assoeiation farm family leads in the dissemination of useful information in agrieulture, home eeonomies, and related subject matter areas.

The Area Farm Management Program encompasses the public educational program in farm management. This is conducted by state speeialists and area extension economists. It is done with in-depth edueational programs in cooperation with the county extension agents. The area speeialists eonduct in-depth workshops in farm business management with farm families, provide a nearby referenee resouree for agents, and develop edueational materials for agent use.

An important and successful tool is the Farm Management Handbook. This eontains material on many of the speeifie management topies of eoneern to agents, farm people, and agribusiness interests.

Speeial interest topies inelude farm finaneial management, land economies, maehinery investment analysis, farm business arrangements, farm records, and farm leases. In-depth workshops are eonduеted in eooperation with the production specialists and county agents. Cost return analysis of the various livestock and

crop programs is an important part of this public educational program. Publications and educational materials are prepared for distribution by county extension offices for the agricultural industry.

Special educational efforts are designed to meet the educational needs of agri-related businesses and persons, such as bankers, Production Credit Association managers, machinery dealers, and feed and supply firms.

Agricultural Policy
The public affairs extension educational program is designed to provide the people of Kansas and their leaders with educational information on policy issues which are of current interest. The purpose is to provide the people with the facts so they have broader and more accurate knowledge from which to make decisions. No causes are espoused and no positions are taken; the program is educational, not political. Problems are analyzed, alternatives and consequences examined, and the people are challenged to reach decisions. The issues to be covered are determined by the people.

The economic information program provides the people of Kansas with current data on factors affecting farming, business and industrial operations, labor supply and demand, and family living costs. The purpose of the program is to disseminate economic information to individuals which helps them make day-to-day decisions or which can be used for immediate or long-term business planning.

Extension Marketing
Professor Erickson; Associate Professor Barton; Assistant Professors Sands and Tierney; Emeritus: Professor Walker.

The Extension Marketing program operates on the philosophy that all people in Kansas have a vested interest in the efficient distribution of food and fiber products. Thus, the educational program remains open to all ideas, interests, and approaches to marketing, and a team approach method is used to solve problems in the marketing field.

The main projects of marketing include marketing information, agri-business, and commodity marketing activities. Marketing news releases, publications directed to the general public, and special information directed toward specific agricultural audiences are methods used in disseminating marketing information.

County public meetings are held where information covering price outlook, market systems, market structure, general economic trends in the nation, international trade, money and credit, bargaining power, balance of payment, and analysis of alternative farm policy proposals is presented.

Educational work is conducted with agricultural business firms handling food and fiber. Those firms are included which buy directly from the farmer and sell input products and retail products and services. Educational work is conducted in the fields of sales, cooperatives, business management, market expansion, personnel training, advertising, and public relations.

The commodity marketing educational program emphasizes livestock, grain, dairy, and poultry marketing. Also included are market organization, supply-demand analysis, short-range price outlook, bargaining power, and transportation problems.

Extension Grain Science and Industry
C.W. Deyoe, head of department
Robert W. Schoeff, state leader

Professors Balding, Schoeff, and Wilcox.

Kansas State University has the only Formula Feed Extension program in the United States designed for the feed manufacturing industry. This unique extension program, established in 1962, assists personnel in the formula feed and allied industries in: 1) the adoption and use of the latest manufacturing techniques, safety equipment and practices; quality control procedures, marketing methods, and modern management principles and tools, including plant feasibility; and 2) the proper use of drugs and feed additives in animals, and manufacturing practices as required by state and federal laws and regulations.

The clientele served are feed manufacturers, retail feed dealers, ingredient and equipment supply firms, building contractors, commercial feedlots, and others involved in the manufacturing, custom mixing, and marketing of commercial feeds.

Educational work also is conducted in: 1) grain marketing in the areas of grain quality, grades and inspection, and transportation; and 2) processing and utilization through milling and baking.

Extension Community Development
William M. Eberle, assistant director of extension

Professor Frazier; Associate Professors Albright, Bittel, Eberle, Halazon, Hendrix, Sisk, and Utermoehlen; AssistantProfessor Darling; Emeritus: Professor Norby.

Community development is a process whereby the people of a community arrive at group decisions and take actions to enhance the social and economic well-being of a community. The long-time goal is to help every Kansas community develop the needed leadership and organizational skills and the pride and enthusiasm that will make them more desirable places to live and work.

Community development educational programs include the major components of community leadership development, community economic development, local government, and various natural resources programs.

The Extension Community Development staff helps communities develop and implement programs in coordination with the five area extension offices, the 105 county extension offices, local leaders and citizens, civic groups, governmental agencies, and other organizations in helping communities to strengthen themselves, promote employment, and improve agriculture.

Community groups are encouraged and assisted in identifying community needs, listing those needs according to priority, identifying human and other kinds of resources available, and making arrangements to use those resources to make progress in solving the community's needs to help the communities improve themselves.

Extension Home Economics programs
Department of Extension Home Economics
Marjory M. Mortvedt, assistant director of extension, home economics programs

Profesors Carlson, Mortvedt, Slinkman, and Tucker; Associate Professors Appleby, Atkinson, Bradshaw, Burke, Clarke, Howe,

Jones, Smith, Walker, and Wiggins; Assistant Professors Davis, Ferrell, Jones, Kitchen, Mark, Penner, Stryker, and Young; Emeriti: Professors Allen, Anderson, Ellithorpe, and Neufeld; Associate Professors Brill, Clonts, Dickinson, Johnson, Schroeder, and Wiggins; Assistant Professors Briggs, Crist, Guthrie, Miller, and Starkey.

Educational programs designed to improve the quality of living are carried on in each Kansas county under the direction of Extension Home Economics programs.

Program emphases are in the areas of: development of children and youth; marital and parental roles; changing roles of men and women; management in allocation of family resources; family financial security; time and money management; consumer performance in the market; nutrition and health; food preparation and preservation; food safety and sanitation; clothing construction and buymanship; health and safety; hazards in the home and community; home selection, building, buying, and remodeling; housing costs and finance; community factors in housing decisions; furnishing and equipping the home; developing community economic, social, cultural, and human resources, including understanding public concerns affecting families; expansion and improvement of cultural opportunities; and development of leadership abilities.

Each county designs its home economics program according to needs of individuals, families, and communities in the county.

Educational materials are prepared by extension specialists and county extension home economists. Educational programs are carried on through organized study groups, public meetings, individual consultation, self-teaching materials and through the mass media of press, radio, and television.

Extension Home Economics programs are often joint with other extension departments, agencies, and organizations.

Extension Expanded Food and Nutrition Education Program
Marjory M. Mortvedt, assistant director of extension, home economics programs

Instructor Lang; Emeritus: Associate Professor Wells.

An educational program in nutrition education for adults and youth from families with limited resources, the program with individual family members and youth is conducted through para-professionals who work under the supervision and administration of an extension home economist. The program is conducted in designated counties.

4-H Youth programs

C.R. Salmon, assistant director of extension

Professors Apel, Lang, and Redman; Associate Professors Adams, Bates, Borst, Fisher, and Salmon; Assistant Professors Astroth, Burns, Kling, McFarland, and Weaver; Emeriti: Professors Busset, Johnson, and Regnier; Associate Professor Whipps.

Kansas 4-H, Kansas' largest youth education program (apart from the public schools), is the pre-college age level education program of the University, conducted in cooperation with County Extension Councils and the United States Department of Agriculture.

The mission of the Kansas State University 4-H specialists staff and county extension agents is to interpret, extend, and encourage the application of relevant and current information to concerned community adults, parents, and community leaders on techniques of working with and relating to children and youth as individuals and in groups so that the children and youth will become self-directing, contributing members of society as they learn the life skills of building self-confidence, developing an inquiring mind, learning to make decisions, relating to others, and developing a concern for the community and those in it.

Kansas 4-H programs include 89,505 boys and girls 7 to 19 years of age. One of four of those participating in 4-H programs are members of community 4-H clubs. Others belong to special interest groups, are active participants in a variety of 4-H events including camps, or are involved in 4-H enrichment programs conducted in cooperation with other community youth-serving agencies and organizations.

The 4-H program is also Kansas' largest adult education program working with youth. County extension council members, numbering 2,745, have the responsibility to identify community youth problems and establish priorities for their solutions. Additionally, nearly 12,000 adults and 5,000 teen volunteers work directly with the 4-H boys and girls throughout the year. Another 15,000 adult volunteers run county 4-H events, promote participation in 4-H programs, and help those adult and teen volunteers who work with the boys and girls directly.

Personnel of numerous other organizations and agencies cooperate in the mission of Kansas 4-H—Youth programs. First and foremost is the support provided to that mission by Cooperative Extension Service specialists in agriculture, home economics, community development, and information services. Personnel in numerous trade and special interest groups in agriculture and other industry sectors provide a significant amount of promotional, physical, and human resource support. More than 100 full- or part-time Kansas 4-H Foundation staff members help in: soliciting contributions to support state 4-H programs; publishing a leader training-oriented magazine with 15,000 circulation, ten times a year; operating two university scholarship houses for 4-H alumni; and providing service and support for two outdoor education facilities.

Within each of the Kansas communities, there are: cooperating community agencies and organizations concerned with child and youth development; county fair organizations; newspapers, radio stations; and community-based cable television systems. Personnel of public and private schools, recreation commission agencies, and other local organizations and groups cooperate in many ways, especially by using the techniques and subject matter as extended and advocated by 4-H—Youth extension personnel.

Within each of the communities, Kansas 4-H'ers were involved in: individual or group projects designed to meet their own interest or needs; service programs to develop responsibility and a sense of caring for the community; one or more meetings to plan, learn, celebrate, have fun, or just talk; and tours or trips to have fun, learn, and broaden their feelings about other people and places. The 4-H camps set the stage for learning about nature, developing new skills, having fun with others, and discovering themselves. County fairs include displays of 4-H exhibits and enable 4-H'ers to compare 4-H projects and tell the 4-H story to the public.

Extension field operations

Area extension offices. Five area extension offices are in different parts of the state to place extension staff, including specialists, closer to the counties in which they work. These area offices are in Garden City, Colby, Hutchinson, Manhattan,

and Chanute. Extension specialists in the area offices work directly with the county extension agents and local leaders in conducting educational programs specifically fitted to the particular area.

Southwest Area Extension Office, Garden City
Ray H. Mann, area extension director

Professor Mann; Associate Professor Hendrix; Assistant Professors Andelt, Burns, Gatliff, Krause, Sloderbeck, and Young.

Northwest Area Extension Office, Colby
Philip B. Finley, area extension director

Associate Professors Adams, Finley, Rogers, Simms, and Sisk; Assistant Professors Ferrell, Mikesell, and Overley.

South Central Area Extension Office, Hutchinson
Lawrence J. Cox, area extension director

Professor Cox; Associate Professors Albright, Bauernfeind, McReynolds, and Wiggins; Assistant Professors Blair, Fjell, Orwig, and Weaver.

Northeast Area Extension Office, Manhattan
Bob W. Newsome, area extension director

Professors Figurski, Francis, and Newsome; Associate Professors Aslin, Atchison, Borst, and Utermoehlen; Assistant Professors Lamond and Mark; Instructor Bonczkowski; Emeritus: Assistant Professor Crist; Instructors Burkhart and Marlow.

Southeast Area Extension Office, Chanute
Benny S. Robbins, area extension director

Professor Kilgore; Associate Professors Appleby, Bittel, Bratton, Brazle, Fausett, Lippert, Robbins, and Rowland; Assistant Professors Astroth and Bruckerhoff.

County extension offices. County extension work is designed to take research information from the University to the people of Kansas to help them solve problems.

There are county extension offices in each of the 105 counties. These offices are staffed with two or more county extension agents. County extension positions in these offices may include any or all of the following: county extension director, agricultural agent, home economist, 4-H agent, horticultural agent. The professional persons holding these positions are joint employees of the county and Kansas State University and are members of the KSU faculty.

In addition to the problem-solving responsibility, local extension professionals assist local persons in organizing group action to help solve community problems.

International Agriculture

Vernon C. Larson, director
108 Waters Hall
532-5714

People from other countries and people in other countries have helped Kansas State University forge a proud achievement record in international activities. Most of these activities have focused on helping the developing countries establish land-grant type institutions geared to increasing food production and improving the country's economy.

The state of Kansas and the KSU staff and faculty have found cooperative environments abroad that, for the most part, have resulted in excellent development programs.

KSU has been involved in international activities since 1956 when its colleges of agriculture, home economics, and veterinary medicine were selected for work in India. The KSU Office of International Agricultural Programs was established in 1960 as the center for agricultural and veterinary medical programs already underway. Most of its activities have been through the Agency for International Development (AID). Involvement by the University since that time has produced a pool of faculty and international officers with long experience in managing international programs in harmony with the U.S. land-grant tradition—the U.S. educational movement that made education available to all people rather than only to those in upper strata.

During the work with India (1956-1972), 59 faculty members served there, and 160 Indian teachers studied at KSU. The work centered at Andhra Pradesh Agricultural University. Most of that university's deans and department heads earned Ph.D. degrees at KSU.

In Nigeria, KSU helped develop colleges of agriculture and veterinary medicine at Ahmadu Bello University (1964-1977). More than 90 faculty members worked in Nigeria and 70 Nigerian faculty have taken graduate training in the U.S., primarily at KSU. In 1980 the University became the recipient of a three-year USDA grant to reestablish linkages with Ahmadu Bello University. Eight similar grants were made available to U.S. universities that had assisted in establishing universities in a developing country. A prime requisite of the $100,000 grant was that it must be beneficial to both the U.S. and foreign institutions. In addition, the Nigerian government is funding the training of agricultural officers in six of its northern states.

From 1977 through 1983 the principal international project of KSU was with the government of the Republic of the Philippines. This $20 million program, the Integrated Agricultural Production and Marketing Project, was funded by USAID and Philippine monies with KSU contracting directly with the Philippine government to provide the technical assistance.

Technical assistance provided to the Philippine government was in the following areas: within the Ministry of Agriculture in agricultural policy, agribusiness, agricultural statistics, agricultural extension, and cooperative development; at the University of the Philippines in Los Banos, the development of an M.S. program in food systems economics; at Central Luzon State University, the development of a B.Sc. program in food systems economics; development of improvement agricultural technology for the area's small farmers; helping to develop a more effective rural marketing system; and assistance in the design and construction of a pilot food and feed processing center.

The long-term impact of the project will be strengthened through the 92 Philippine professionals who earned advanced degrees at KSU and other universities in the United States and the more than 150 Filipinos trained in a variety of technical programs in the United States and other countries.

Over the life of the project, 21 KSU permanent and temporary faculty served consultancies of one year or longer and 46 others

worked on special projects for periods of from two weeks to six months.

The Food and Feed Grain Institute highlights KSU's unique competence in the post-harvest technology of food and feed grains. It has provided international technical assistance and research to over fifty countries since its inception in 1966.

KSU also is linked with the land-grant institutions of Iowa State, Missouri, Oklahoma State, and Nebraska to form the Midamerica International Agricultural Consortium (MIAC). This arrangement enables the University to respond quickly to international agency requests for assistance to developing countries in solving their food problems.

In August of 1982 KSU subcontracted with MIAC to serve as the lead institution to administer the Farming Systems Research Project in Botswana, Africa. The emphasis of this five-year, $4.2 million, USAID-funded project is the development, within the research division of the Ministry of Agriculture, of an on-farm research component and linking this to the Botswana Extension Service. Seven KSU faculty are currently on long-term assignment in Botswana and six Botswana professionals are in degree programs at KSU and other MIAC institutions.

In 1979, the University received a five-year grant from AID to strengthen its capacity to assist the developing world. Much of the activity focuses on farming systems research. In addition, the library holdings are being increased, courses added with an international component, and special language courses provided for the faculty.

Division of Continuing Education

LaVerne B. Lindsey, assistant provost for continuing education
Elizabeth J. Vallance, director, academic outreach section
Roberta Flaherty, director, conferences section
Theodore W. Wischropp, director, development section
Douglas W. King, director, administrative systems

301 Umberger Hall
532-5560

Professor Lindsey; Associate Professor Cashin; Assistant Professors Aubrecht, Lockhart, Miller, and Vallance; Instructors Acer, Coates, Ender, Flaherty, Gorsky, Hurley, Keller, King, Krahn Nickel, Kruh, Larrabee, Larson, Maes, Martin, Nogy, Noma, Pankratz, Pittle, Polson, Schanker, Shelley, Sinn, Smith, Stanley, Trent, Wherry, Wilhelm, and Wischropp.

The Division of Continuing Education was formally established in 1966 by the Kansas Board of Regents. It functions as the coordinating agency through which Kansas State University makes its resources available on a statewide basis.

A variety of credit and non-credit educational programs designed to satisfy the need for professional development or personal enrichment are currently offered to residents in communities throughout the state.

Each year over 40,000 people participate in non-credit activities, and off-campus credit courses offered in several Kansas communities.

Summer school

Summer school is an integral part of the educational program of Kansas State University. The particular courses chosen for summer school are determined by each college on the basis of expected student demand. It is designed to meet the needs of the following groups:

1. Undergraduate students who wish to accelerate their programs of study toward an early graduation, and those who wish to make up courses missed during fall or spring semesters.

2. Graduate students, for whom summer school offers an opportunity to make more rapid progress towards a degree, and teachers who are unable to attend the University during the two semesters.

3. Special interest, non-degree groups, including public school, business and industrial personnel, and returning students.

High school graduates expecting to enter the University for the first time are urged to attend summer school. These students find it valuable in establishing study habits, becoming acquainted with the campus and faculty, and adjusting to University life.

All facilities and services of the University available in the regular semesters also are available in the summer, including housing, food service, counseling and testing services, Lafene Student Health Center, and K-State Union recreational programs. A large number of classrooms and library study rooms are air conditioned.

A special recreation program is planned for summer sessions. It includes dancing, parties, movies, lectures, concerts, plays, tennis, boating, water skiing, swimming, fishing, bowling, and other sports.

Summer school is an eight-week session in which a student may earn as many as nine semester hours of credit. Full-credit concentrated short courses are offered to accommodate students who cannot attend the eight-week session. The length of these special sessions varies from a week to four weeks.

The *Summer School Bulletin* gives complete and detailed information about summer school. It is available in early spring each year. A copy may be obtained free of charge by requesting it from the Office of Admissions in Anderson Hall.

Through the Regents' Continuing Education Network, some KSU summer courses are offered at 36 Kansas locations. (See Regents' Continuing Education Network for locations.) The network allows individuals to enroll in courses offered by two other Kansas universities as well as KSU.

Summer school teaching staff is formed from the regular instructional staff of the University, supplemented by visiting professors and lecturers.

Courses offered in the summer are chosen from those offered in regular semesters with the addition of conferences and workshops planned to meet special needs.

Outreach (off-campus) credit classes

The Division of Continuing Education strives to determine the educational needs of the people throughout the state and respond to those needs with credit programs from the various colleges and academic units.

An ever-expanding schedule of courses is offered at a growing number of locations in Kansas. Kansans may work toward an advanced degree from Kansas State University by attending

classes taught by University faculty in students' home communities. Programs of sequenced courses lead to degrees in such academic areas as education, home economics, social work, and industrial engineering. Outreach programs in other academic areas are under development as well.

In addition to sequenced courses leading toward a graduate or undergraduate degree, courses in response to specific requests or designed for particular groups are scheduled through the Division of Continuing Education and taught off campus. In-service training programs for various professional groups are frequently requested; academic units of Kansas State University respond to such requests by providing workshops, conferences, or short courses designed to cover topics of current interest to these groups. For detailed information contact KSU Outreach Coordinator, Umberger Hall, 913/532-5724, or toll free in Kansas 1-800-432-8222.

Intersession

Kansas State University conducts its Intersession program during major breaks in the standard academic calendar. There are two Intersessions offered each year: one in early January, the other in late May and early June. During this time, 25 to 45 courses are offered, including regular and new or experimental courses. These courses generally run for two or three weeks and are attended by current KSU students, as well as by persons unable to attend the University during the regular semesters. Intersession classes are open to the public; prior enrollment is not required.

Intersession offers the opportunity to explore areas of study which otherwise would not be possible during regular school terms. For example, an extended two- or three-week trip to another part of the state or country is possible during this time. Students also have the opportunity to explore both new interests and topics in their major fields with more depth and concentration than might otherwise be possible. Many students use Intersession as an opportunity to examine academic areas not scheduled in their current curricula. The KSU faculty uses Intersession as an opportunity to experiment with new ideas and formats for teaching. Many courses are offered on an experimental basis to test the possibility of becoming regular offerings by a department.

Intersession courses are considered part of the regular KSU course offerings and, as such, can fulfill degree requirements or requirements for recertification when applicable. Students are encouraged to consult with their advisors to determine if a particular Intersession course will meet necessary degree requirements.

Fort Riley course offerings

Kansas State University offers a series of courses at nearby Fort Riley, Kansas. KSU works in cooperation with the Army Education Center (Old Trooper University) to provide persons in the Fort Riley community the opportunity to take University courses. Courses are scheduled in the evening to be convenient for army personnel who are required to maintain a full-time job while attending classes. The courses are taught by regular KSU faculty members, and fulfill degree requirements where applicable.

Courses are scheduled to allow the pursuit of associate, bachelor's, and master's degrees in several academic disciplines. Areas of study in highest demand include general social sciences, business administration, and education. KSU courses offered at Fort Riley are open to all area residents, although military personnel have priority.

Kansas State University maintains an office at Fort Riley staffed by KSU personnel familiar with degree requirements and KSU procedures on acceptance of transfer work. Students are encouraged to meet with these advisors to pursue their academic goals. For additional information contact the KSU Coordinator of Ft. Riley, 913/784-5930.

Servicemember's Opportunity College

Kansas State University is a cooperating Servicemember's Opportunity College (SOC) and a member of the Associate Degree (SOCAD) Network. KSU maintains a commitment to servicemen and servicewomen interested in pursuing college educations. Through the Division of Continuing Education, KSU offers degree programs at Fort Riley and graduate course work at Fort Leavenworth. All courses are scheduled to avoid conflicts with military duties and to provide the opportunity for continued education to service personnel.

Kansas Regents' Network (Telenet)

Many courses and educational programs normally offered on the KSU campus are available to the people of Kansas by means of the Regents' Continuing Education Network (Telenet). The network is a system of 36 educational centers located throughout Kansas and linked together via telephone lines. The locations include: Abilene, Arkansas City, Atchison, Beloit, Chanute, Colby, Concordia, Dodge City, El Dorado, Emporia, Garden City, Goodland, Great Bend, Hays, Howard, Hutchinson, Independence, Larned, Lawrence, Liberal, Manhattan, Mankato, Marysville, Newton, Norton, Ottawa, Overland Park, Paola, Pittsburg, Pratt, Sabetha, Salina, Stockton, Topeka, Wellington, and Wichita.

Each Telenet center is equipped with microphones and speakers allowing easy two-way communication among all 36 locations. In addition to the amplified telephone system, each center is equipped with audio-visual support equipment. A monitor is present at each location to operate the equipment, distribute handout materials, and provide general educational support.

Each year several thousand people participate in credit and non-credit courses at the graduate and undergraduate levels. Instruction originates from KSU or one of the other Regents' universities. However, the flexibility of the system allows resource people from throughout America to be linked electronically into the system. Thus, Kansans across the state can have access to national educational resources.

Meetings and conferences also are held on Telenet. The telephone hookup allows nationally recognized people to participate in local activities at a minimum cost and maximum effectiveness.

Non-Traditional Study Program

The Non-Traditional Study Program (NTS) is designed for undergraduate students who need a personalized approach to study. NTS is oriented toward those students who have encountered obstacles to traditional college attendance, helping them surmount barriers created by distance, by physical handicap, or by job.

NTS advisors assist students in planning individual programs of study and serve as guides to faculty and media resources. The advisors help students select options such as late afternoon, evening, or off-campus classes, correspondence study, credit by examination, or work-study programs.

In addition to class requirements, the advisors direct students toward the completion of independent study projects, and toward the development of documentation of prior non-

sponsored learning. Given appropriate documentation, credits may be granted for learning achieved without formal, sponsored instruction.

Students graduating through the NTS program may earn degrees in traditional academic areas. They may earn college credit through the use of the nontraditional delivery systems mentioned earlier. Also available to NTS students is the Bachelor of General Studies, a competency-based degree program.

Conference Office

The KSU Conference Office makes the University facilities and resources available to individuals and organizations through the design and management of conferences, short courses, workshops, special interest programs, and non-credit programs. All programs, sponsored by KSU in which fees are collected from the participants and/or university facilities are utilized are coordinated through this office, which is empowered to collect all fees and pay all bills associated with such activities.

Services available through the Conference Office include: program development and design, program budgeting, brochure design and printing, publicity, facility, food and accommodation arrangements, speaker and resource arrangements, preparation of materials, registration, and follow-up activities.

The Conference Office can assist you in: budgeting a meeting into your grant proposal; bidding to host your professional association on campus or elsewhere; disseminating your research; pursuing an area of interest with others.

Organizations outside the University may utilize these program services to facilitate meetings of their membership or employees. The Conference Office can also make many of its training programs available for in-house employee development.

Persons interested in further information on these services or specific training programs should contact the KSU Conference Office, 1623 Anderson Avenue, Manhattan, Kansas 66502 or phone 913/532-5575.

Community Activities Program

Through the Community Activities Program both adults and children participate in and receive practical instruction on a variety of topics related to recreational and leisure time activities. Special events and instructional activities are usually offered on a non-credit basis, with scheduling during the afternoon, evenings, or on weekends. Although most classes meet on the KSU campus or in Manhattan, there are a few regional satellite programs.

Physical activity classes are scheduled each semester and during the summer and offer instruction in aquatics, court sports, dance, gymnastics, horsemanship, martial arts, motorcycling, and shooting sports. Various clinics, workshops, and other special activities are offered during the summer session. The Community Activities Office also functions as the initial contact for groups not affiliated with KSU who are interested in using the Ahearn complex facility.

For further information on Community Activities, write 1623 Anderson Avenue, Manhattan, Kansas 66502 or phone 913/532-5570.

Center for Faculty Evaluation and Development in Higher Education

The Center for Faculty Evaluation and Development was created in 1975 by a grant from the W.K. Kellogg Foundation, but is now supported by fees received from its nationally marketed evaluation and development instruments and services. Center materials have been recommended for consideration by recognized authorities in numerous professional publications. These materials include the IDEA System (Instructional Development and Effectiveness Assessment) which was developed on the KSU campus.

The center also has a team of educational development specialists who provide presentations, consultation and in-service training. The center's national seminar alone is presented in at least eight locations across the nation each year. For additional information contact the Center for Faculty Evaluation and Development, Wareham Building, 1623 Anderson Avenue, Manhattan, Kansas 66502, 913/532-5970.

Sponsored Projects Section

The services of the Sponsored Projects Section are available to any member of the KSU community who is interested in obtaining outside support for a continuing education project, such as off-campus credit courses, conferences, workshops, seminars, or in-plant training for industry. Help will be given on the identification of outside funding sources, contact with outside funding sources, preparation of funding requests to include program narratives and budgets, submission of completed proposals, and administration of the project. For further information, contact the Sponsored Projects Section, 301 Umberger Hall, Manhattan, Kansas 66506, 913/532-5560.

University for Man

University for Man (UFM) is a community learning center which develops and conducts a wide variety of informal educational opportunities that do not involve prerequisites, grades, or credits. More than 250 programs are available during the five sessions a year. Classes, symposia, forums, and unstructured learning experiences covering a wide range of human interests, activities, and concerns are offered. A handicapped horticultural program, appropriate technology workshops, and pottery, darkroom, and woodworking cooperatives are also available. University for Man is committed to the development and expansion of informal learning opportunities available to the people of Kansas. Technical assistance is provided throughout Kansas and the Midwest to other communities beginning similar programming. As a new endeavor, UFM is part of a national consortium to study the learning needs of the postsecondary rural adult. This Action Agenda Project, is funded by Fund for the Improvement of Postsecondary Education.

Intercollegiate Programs

Secondary Majors

Kansas State University offers secondary majors in Gerontology, International Studies, Latin American Studies, South Asia Studies, and Women's Studies. Open to students in all colleges, these secondary majors are designed to be taken concurrently with the student's primary major. Most programs of study will allow students to take both a primary and a secondary major within the normal four-year program, especially because courses applied toward the secondary major may also satisfy requirements for general education or restricted electives.

As interdisciplinary programs, secondary majors provide students with an opportunity to understand the viewpoints and methodologies of a multiplicity of disciplines as they are focused on a central subject. Secondary majors thus allow the student to participate in the process of the integration of knowledge. For some students, these interdisciplinary programs are career oriented, the special concentration providing extra qualifications for employment.

Program requirements follow a common pattern. Each includes two or more of the following features: an interdisciplinary introductory course (which might also satisfy distribution requirements); a list of electives from which students choose about 18 hours; and an interdisciplinary senior seminar featuring supervised independent study.

Each program has a supervisory committee and a director to whom students may refer for advising.

Gerontology

The rapid growth of an older population in the United States is creating an increasing demand for personnel who possess specialized training in gerontology in a variety of occupations and professions.

Secondary major in Gerontology
Undergraduate
The secondary major in Gerontology is a 24-hour program of study. It includes two required courses, Introduction to Gerontology and Senior Seminar in Gerontology, and 18 semester hours from the approved list of gerontology electives offered in participating departments in five colleges in the University. Elective courses must be taken in a minimum of three separate departments. Courses listed below will receive credit in the Gerontology studies program and new courses will be added to the program as the curriculum is updated.

Students taking the secondary major in Gerontology should consult the Center for Aging staff, 1 Fairchild Hall, 532-5945.

Interdisciplinary courses
315. Introduction to Gerontology. (3) I. Multidisciplinary introduction to the field of aging. Examines social, psychological, developmental, organizational, and economic aspects of aging. Theoretical, methodological, and applied issues of aging related to contemporary American society. Pr.: None. 315-0-4900

415. Senior Seminar in Gerontology. (3) II. Integration of course work in gerontology with in-depth project in special interest area. Pr.: completion of 15 hours of course work in gerontology secondary major. 415-0-4900

Departmental course electives
See the appropriate college sections of this catalog for further description.
College of Agriculture
Horticulture
HORT 525. Horticulture for Special Populations.

College of Architecture and Design
Architecture
ARCH 730. Environmental Design and the Aging Process.

Regional and community planning
PLAN 315. Introduction to Planning (Gerontology).
PLAN 610. Community Development Workshop.

College of Arts and Sciences
Biology
BIOL 240. Structure and Function of the Human Body.

English
ENGL 505. Themes in Literature: Literature of Aging.

Physical education, dance, and leisure studies
PE 335. Physiology of Exercise.
LS 488. Recreation for Special Populations.

Psychology
PSYCH 520. Life-Span Personality Development.
PSYCH 715. The Psychology of Aging.

Social work
SOCWK 566. Social Work in Aging Services.

Sociology
SOCIO 744. Sociology of Aging.

Speech
THTRE 665. Theatre for Special Populations.

College of Education
Adult and occupational education
EDAO 780. Educational Gerontology.

College of Home Economics
Clothing, textiles and interior design
ID 751. Designing for Exceptional Needs.

Family and child development
FCDEV 510. Human Development and Aging.
FCDEV 654. Death and the Family.

Family economics
FEC 615. The Elderly Consumer.

Foods and nutrition
FN 132. Basic Nutrition.

For more information about the secondary major in Gerontology, contact the Center for Aging, 1 Fairchild Hall, Manhattan, Kansas 66506. 913/532-5945.

Graduate emphasis in Gerontology
The graduate emphasis in Gerontology is an interdisciplinary program, designed to be taken concurrently with or in addition

to a master's or doctorate degree in a discipline. The total program requires 14 to 18 credit hours, some of which may overlap with requirements for the student's degree. The specific requirements are as follows: one graduate level (700+) course in gerontology in the student's own discipline (3 credit hours); two graduate level (500+) courses in gerontology in disciplines other than the student's own (6 credit hours); practicum-colloquium in gerontological setting (3 credit hours); master project, thesis or report or Ph.D. dissertation with gerontological focus or relevant to aging (2-6 credit hours).

Departmental course electives
Graduate courses currently offered at KSU included in this emphasis program are:

College of Agriculture
Horticulture
HORT 525. Horticulture for Special Populations.

College of Architecture and Design
Architecture
ARCH 730. Environmental Design and the Aging Process.

Regional and community planning
PLAN 610. Community Development Workshop.

College of Arts and Sciences
English
ENGL 505. Themes in Literature: Literature of Aging.

Physical education, dance, and leisure studies
LS 862. Leisure Counseling.

Psychology
PSYCH 520. Life-Span Personality Development.
PSYCH 715. The Psychology of Aging.

Social work
SOCWK 566. Social Work in Aging Services.

Sociology
SOCIO 744. Sociology of Aging.
SOCIO 944. Seminar in the Sociology of Aging.

Speech
THTRE 665. Theatre for Special Populations.

College of Education
Administration and foundation
EDAF 862. Leisure Counseling.

Adult and occupational education
EDAO 780. Educational Gerontology.

College of Home Economics
Clothing, textiles and interior design
ID 751. Designing for Exceptional Needs.

Family and child development
FCDEV 510. Human Development and Aging.
FCDEV 654. Death and the Family.
FCDEV 845. Adult Development and Aging.

Family economics
FEC 615. The Elderly Consumer.

Foods and nutrition
FN 817. Nutrition and the Aging.

For more information about the graduate emphasis in Gerontology program contact the Center for Aging, 1 Fairchild Hall, Manhattan, Kansas 66506. 913/532-5945.

International Studies

The International Studies program is designed in part to promote understanding of the international community and is characterized by a strong commitment to a multi- and interdisciplinary orientation. The program provides students not only a field of academic study, but also provides background for those interested in training for various careers.

The International Studies program encourages a substantial distribution of foreign area and international course work under the direct, personal guidance of an interdisciplinary faculty committee. Students must enroll in another major before taking International Studies as a secondary major.

To complete the secondary major, students must complete the equivalent of four semesters of a modern (foreign) language. In addition, they must complete 21 hours from the approved course list, as well as the required Senior Seminar in International Studies.

Courses in the program are divided into A and B groups. Group A courses are global, international or comparative. Group B courses are concerned primarily with some aspect or aspects of a foreign cultural realm. The elective courses must be taken in at least two of the following colleges: agriculture, architecture and design, arts and sciences, business, and home economics. No more than 6 hours may be applied from a single discipline or a single world region, and no more than 6 hours may be counted toward both a secondary major in area studies and in International Studies.

At least 9 hours must be drawn from Group A courses. Courses in the International Studies program may also serve to meet general studies requirements for the bachelor's degree. Special topics courses may be included with the approval of the International Studies Committee. All students working toward a secondary major in International Studies will have an advisor who teaches in the International Studies program. Careful advising for students in the program is extremely important to achievement of desirable breadth and perspective.

Courses listed below are those for which students may receive credit in the International Studies program.

Interdisciplinary
A DAS 425. Senior Seminar in International Studies. (3)
I, II. An intercollegiate, interdisciplinary course focusing on a major international issue or issues. In order to complete supervised independent study and discussion, students will present papers which integrate and draw upon their previous academic experience in the international field. Pr.: Completion of 15 hours of course work in International Secondary major.
DAS-425-0-4903

College of Agriculture

A	AGEC 015	International Agricultural Development	3

College of Architecture and Design

A	PDP 510	Man and His Surroundings	3
B	ARCH 655	Foreign Seminar	V
A	PLAN 715	Planning Principles	3

College of Arts and Sciences

Anthropology

B	ANTH 505	Introduction to the Civilization of South Asia I	3
B	ANTH 506	Introduction to the Civilization of South Asia II	3
A	ANTH 507	Peasant Society	3
A	ANTH 511	Cultural Ecology and Economy	3
A	ANTH 519	Practical Anthropology	3
B	ANTH 536	Black Cultures of the Americas	3
A	ANTH 604	Culture and Personality	3
A	ANTH 610	Social Organization in Nonliterate Cultures	3
B	ANTH 632	Indians of Middle America	3
B	ANTH 634	Indian Cultures of South America	3
B	ANTH 650	Cultures of Africa	3
A	ANTH 685	Race and Culture	3

Economics

B	ECON 505	Introduction to the Civilization of South Asia I	3
B	ECON 506	Introduction to the Civilization of South Asia II	3
A	ECON 636	Capitalism and Socialism	3
A	ECON 681	International Trade	3
A	ECON 682	Economics of Underdeveloped Countries	3

Geography

A	GEOG 440	Geography of Natural Resources	3
A	GEOG 450	Geography of Economic Behavior	3
A	GEOG 460	Future Worlds	3
B	GEOG 620	Geography of Latin America	3
B	GEOG 640	Geography of Europe	3
B	GEOG 650	Geography of the Soviet Union	3
A	GEOG 710	Geography of Hunger	2
A	GEOG 715	World Population Patterns	3
A	GEOG 720	Resources and Economic Development	3
A	GEOG 780	Cultural Geography	3

History

B	HIST 505	Introduction to the Civilization of South Asia I	3
B	HIST 506	Introduction to the Civilization of South Asia II	3
A	HIST 544	History of U.S.—Soviet Relations Since 1917	3
B	HIST 560	Latin American Nations	3
B	HIST 562	Modern Mexico	3
B	HIST 573	Twentieth-Century Europe	3
B	HIST 574	Europe Since World War II	3
A	HIST 577	European Diplomatic History II	3
B	HIST 584	History of France Since 1715	3
B	HIST 587	Modern Germany, 1789-1914	3
B	HIST 588	Modern Germany, 1914-1945	3
B	HIST 592	Grandeur and Decline of Imperial Russia	3
B	HIST 623	An End to Empire: The Dynamics of Asian Nationalism	3
B	HIST 702	South Asian History II	3
B	HIST 766	Modern Eastern Europe	3
B	HIST 769	The Russian Revolutions and the Soviet System	3
B	HIST 780	Rise and Fall of the House of Hapsburg	3

Journalism and mass communications

A	JMC 670	International Communications	3

Modern languages

B	FREN 502	French Literature in Translation	3
B	GRMN 503	German Literature in Translation	3
B	RUSSN 504	Russian Literature in Translation: the 19th Century	3
B	SPAN 505	Spanish Literature in Translation	3
B	MLANG 507	European Literature in Translation	3
B	RUSSN 508	Russian Literature in Translation: the Soviet Period	3
B	FREN 514	French Civilization	3
B	GRMN 530	German Civilization	3
B	SPAN 565	Spanish Civilization	3
B	SPAN 566	Hispanic-American Civilization	3

Political science

B	POLSC 505	Introduction to the Civilization of South Asia I	3
B	POLSC 506	Introduction to the Civilization of South Asia II	3
B	POLSC 511	Contemporary Chinese Politics	3
A	POLSC 545	The Politics of Developing Nations	3
B	POLSC 721	European Political Systems	3
B	POLSC 722	Latin American Politics	3
B	POLSC 723	South Asian Political Systems	3
B	POLSC 724	Middle Eastern Political Systems	3
B	POLSC 725	Southeast Asian Political Systems	3
B	POLSC 726	African Political Systems	3
B	POLSC 727	The Soviet Political System	3
B	POLSC 728	Comparative Security Establishments	3
A	POLSC 729	Administration in Developing Nations	3
A	POLSC 741	International Relations	3
A	POLSC 743	American Foreign Policy	3
A	POLSC 745	International Politics of Europe	3
A	POLSC 747	International Law	3
A	POLSC 749	International Defense Strategies	3
A	POLSC 751	International Organization	3
A	POLSC 752	International Politics of South Asia	3
A	POLSC 753	International Politics of the Middle East	3

Sociology

B	SOCIO 505	Introduction to the Civilization of South Asia I	3
B	SOCIO 506	Introduction to the Civilization of South Asia II	3
A	SOCIO 540	Social Organization	3
A	SOCIO 740	Comparative Social Systems	3
A	SOCIO 741	Social Differentiation and Stratification	3
B	SOCIO 742	South Asian Social Systems	3
A	SOCIO 770	Sociology of Dominant-Minority Relations	1-3

College of Business Administration

A	GENBA 644	International Marketing	3
A	GENBA 690	International Business	3

College of Home Economics

A	FN 703	Nutrition in Developing Countries	3

For more information about the secondary major in International Studies, contact Charles Bussing, Department of Geography, Dickens Hall, Manhattan, KS 66506.

Latin American Studies

The secondary major in Latin American Studies is designed to complement course work by students in their chosen majors. Course requirements in at least four disciplines provide a diverse introduction to Latin American culture. The senior seminar is intended to allow students to do independent study using information sources from different disciplines.

To complete the course requirements for the secondary major students must complete two years (four semesters) of Spanish or Portuguese or have equivalent competence in either language. Students must also select 21 hours of course work in a minimum of four departments. No more than 9 hours in any department may be counted as part of secondary major requirements. The senior seminar in Latin American studies is required.

The following courses are those for which students may receive credit for the secondary degree in Latin American Studies. Courses not listed here may be approved as deemed appropriate by the Latin American Studies Committee, and could be accepted in addition to the approved list.

Language requirement:
Two years of Spanish or Portuguese or equivalent competence in either language

Area courses:
21 hours; in addition to the Senior Seminar, courses must be taken in a minimum of four departments

Interdisciplinary (required)
College of Arts and Sciences

DAS 407	Senior Seminar in Latin American Studies

College of Agriculture
Horticulture

HORT 505	Comparative Agriculture: Latin America

College of Arts and Sciences
Anthropology

ANTH 532	Mexican and Central American Indians
ANTH 536	Black Cultures of the Americas
ANTH 555	Black Music of the Americas
ANTH 634	Indian Cultures of South America
ANTH 673	Precolumbian Civilizations of Mexico & Guatemala

Geography

GEOG 620	Geography of Latin America

History

HIST 560	Latin American Nations
HIST 561	Colonial Hispanic America
HIST 562	Modern Mexico

Modern languages

SPAN 563	Introduction to the Literature of Spanish America
SPAN 566	Hispanic-American Civilization
SPAN 751	Spanish-American Narrative to 1950
SPAN 752	Contemporary Spanish-American Literature
SPAN 755	Spanish-American Poetry and Drama

Music

MUSIC 555	Black Music of the Americas

Political science

POLSC 722	Latin American Politics

Sociology

SOCIO 733	Gender, Power and Development
SOCIO 734	Sociology of Agricultural Development
SOCIO 736	Applied Agricultural and Rural Change in Developing Countries

For more information about the secondary major in Latin American Studies, contact Bradley Shaw, Department of Modern Languages, Manhattan, Kansas 66506.

South Asian Studies

Aruna Michie, director

South Asian Studies at KSU focus on the geographic, linguistic, and cultural regions of Afghanistan, Bangladesh, Pakistan, India, Nepal, Sri Lanka, Bhutan, and the Maldive Republic.

The basic South Asia courses at KSU are Introduction to South Asian Civilizations I and II, taught jointly by South Asia faculty from the departments of history, political science, economics, and sociology, anthropology, and social work. These courses may be taken by any undergraduate and credit may be received in any one of the participating departments. Advanced courses in South Asian Studies and related subjects are taught in all of these departments. In addition, language training is offered in Urdu (the national language of Pakistan and a major language in India) and Hindi (the official language of India). Instruction also may be available, upon sufficient demand, in other South Asian languages and in Arabic. These languages may be used to satisfy requirements for the bachelor of arts and higher degrees.

Secondary major
Students completing a required number and distribution of language and area studies courses may earn a secondary major in South Asian studies. This secondary major is open to any student at KSU. A student receives, along with the primary major, a broad interdisciplinary education concerning the Indian subcontinent, whose people constitute twenty percent of humanity and who are the inheritors of ancient and highly sophisticated civilizations famous in the West for their religions, philosophy, music, art, literature, architecture, and science. Students are prepared for graduate work which focuses specifically on South Asia or may specialize in various careers.

This interdisciplinary program is administered through the South Asia Center. Students who wish to have a secondary major in South Asian studies file an academic data sheet with the center. All courses in the program are approved by South Asia faculty, who have the responsibility to decide which courses are to be included within the program. Transfer students should apply to the South Asia Center to have their course work validated for this major. If a course is accepted by KSU, it may then be applied to the South Asian studies major. The center faculty act as advisors to those students within this program. The advisory function, however, is limited to this program and does not replace the position of the student's first major advisor.

Course requirements for the secondary major in South Asian studies:

Language requirement:
The first two years of Hindi/Urdu or equivalent competency in a South Asian language.

URDU 171	Hindi/Urdu I
URDU 172	Hindi/Urdu II
URDU 273	Hindi/Urdu III
URDU 274	Hindi/Urdu IV

South Asian civilizations:
One course required

xxx 505	South Asian Civilizations I
xxx 506	South Asian Civilizations II

(Cross-listed in the five participating departments: anthropology, economics, history, political science, and sociology.)

Area course requirement
Four of the courses listed below in at least three fields. One of the four may be drawn from the auxiliary list with approval of the South Asia Committee.

See appropriate college section of this catalog for further description.

Economics

ECON 699	Seminar in Economics: South Asia

History

HIST 350	Gandhi and the Indian Revolution
HIST 504	History of Hinduism
HIST 598	Topics in Non-Western History (South Asia)
HIST 701	South Asian History I
HIST 702	South Asian History II

Political science

POLSC 723	South Asian Political Systems
POLSC 752	International Politics of South Asia

Sociology

SOCIO 742	Society and Change in South Asia

Auxiliary courses

AGEC 615	International Agricultural Development
ECON 636	Capitalism and Socialism
ECON 682	Economics of Underdeveloped Countries
POLSC 545	Politics of Developing Nations
POLSC 729	Administration of Developing Nations
SOCIO 734	Sociology of Agricultural Development
SOCIO 740	Comparative Social Systems
ANTH 507	Folk Cultures
ANTH 511	Cultural Ecology and Economy
MKTG 544	International Marketing
MANGT 690	International Business

Graduate work
Specialization in South Asian Studies is possible at the master's level in history, political science, and sociology, and, in selected instances, for Ph.D. students in history and sociology.

Cultural events
In addition to its on-campus instructional program, the center sponsors occasional cultural events, colloquia, visiting public speakers, a film series, and courses and public lectures at other institutions. It also provides audio-visual support, training, and consultation to elementary and secondary teachers interested in developing South Asia units in their curricula.

For further information on South Asian Studies, contact the director, South Asia Center, Manhattan, Kansas 66506, 913/532-5738.

Women's Studies

Professors Lynn,* Neely,* and Flora;* Associate Professors Benson, Bixler, Coyner,* Culley, Gray, Hausmann, Oukrop, and Saal; Assistant Professors Bristow, Davis, Holcomb, Richter,* and Smith; Instructor Campbell.

*Indicates graduate faculty in Women's Studies.

The Women's Studies program focuses on women, whose changing roles and expectations are the most profound and widespread social phenomenon of our time. All social institutions, from politics and industry to the family and the arts, are affected by these changes, as are all individuals, including men and children as well as women themselves. Traditional expectations no longer hold, as an entire society adjusts to the fact that most women will work outside the family most of their lives, and are entitled to equal opportunity with men in all spheres of human life.

Courses in Women's Studies examine various aspects of women's lives, including not only the barriers and prejudices that still hold women back but also women's achievements against the odds. Some courses focus on the nature of sex differences and gender roles. Others focus on the interrelationships between women, gender roles, and the major institutions which shape our society. Humanities courses explore images and achievements of women in a wide range of creative media. History and anthropology discuss interrelationships of women and men in various cultural contexts across time and around the world.

Women's Studies is direct preparation for many careers which serve, counsel, or communicate about women. A secondary major in Women's Studies combines especially well with such majors as journalism, any form of counseling, or pre-law. Women's Studies is also an excellent liberal arts concentration, forming a firm basis for graduate work in any liberal professional field.

To complete the secondary major, a student must take two required courses (Introduction to Women's Studies and Senior Seminar in Women's Studies), and 18 semester hours in elective courses from the colleges of arts and sciences, business administration, education, and home economics, for a total of 24 semester hours. Elective courses must be taken in at least two colleges. Courses in the Women's Studies program also may serve to meet general education and major requirements, and interdisciplinary courses may be counted as either humanities or social sciences. The courses listed below have been approved for credit toward the secondary major in Women's Studies.

For more information or advising in Women's Studies, contact Sandra Coyner, Director, 22 Eisenhower Hall, 913/532-5739.

Interdisciplinary courses

***xxx 105. Introduction to Women's Studies.** (3) I, II. A systematic introduction to women's studies as an academic discipline, drawing research from fields in humanities, social science, education, home economics and management to analyze images of women, status of women, sex differences, gender roles and stereotypes, patterns of success, women and relationships, current controversial issues affecting women, and feminism as a social and historical movement. An academic perspective on issues of equality and justice for women, emphasizing scholarship on how women perceive their own lives. xxx-105-0-4903

***xxx 405. Senior Seminar in Women's Studies.** (3) II. An intercollegiate, interdisciplinary course organized topically with students presenting papers which draw upon previous and concurrent academic experience and which approach a given topic with a consistent focus on the role of women. Provides supervised independent study and subsequent discussion, allowing students to integrate and order their perceptions about the unique roles, problems, and contributions of women. Pr.: Introduction to Women's Studies and 15 hours of women's studies courses. 405-9-4903

***xxx 505. Independent Study in Women's Studies.** (1-3) I, II. Independent, interdisciplinary, supervised studies in an area of Women's Studies which does not fall within the boundaries of a traditional department. May be repeated once for credit with change of topic. Pr.: Junior standing, consent of instructor(s), and approval of Women's Studies Faculty. xxx-505-0-4903

*To enroll, use one of these prefixes: DAS, College of Arts and Sciences; DED, College of Education; DHE, College of Home Economics; GENBA, College of Business Administration

Women's Studies courses offered by departments
See appropriate college sections in this catalog for further description.

College of Arts and Sciences:

Art

ART 654	Women in Art

Biology

BIOL 397	Topics in Biology (when offered on "Science, Sex and Society")

English

ENGL 515	Literature and Society (when offered on "Third World Women Writers")
ENGL 525	Women in Literature
ENGL 707	Medieval Literature (when offered on "Images of Women")

Physical education, dance, and leisure studies

PE 775	Issues of Women and Sports

History

HIST 512	Women in European History
HIST 533	Topics in the History of the Americas (when offered as "Images of Women in American Popular Culture, 1900-1980" or "Women in Latin America" or "Gender Roles, Sexuality and the American Medical Profession, 1800-Present")
HIST 541	Women in American History
HIST 563	Topics in Comparative History (when offered as "Women, Sex Reform and Feminism in America")
HIST 928	Seminar in American History (when offered as "Women's History")
HIST 930	Seminar in Modern European History (when offered as "Female Domesticity in Pre-Industrial Europe")

Philosophy

PHILO 397	Experimental Studies in Philosophy (when offered as "Feminist Issues in Philosophy" or "Feminism and Traditional Socio-Political Theory")

Political science

POLSC 706	Sex and Politics
POLSC 799	Pro-Seminar in Political Science (when offered as "Women the Constitution and the Supreme Court")

Psychology

PSYCH 540	Psychology of Women
PSYCH 563	Psychology of Women at Work
PSYCH 790	Topics in Psychology (when offered as "Feminist Therapy" or "Non-Sexist Psychology")
PSYCH 959	Seminar in Social Psychology (when offered as Psychology of Women")

Sociology, anthropology and social work

SOCIO 545	The Sociology of Women
ANTH 508	Male and Female: Cross-Cultural Perspectives

Speech and theatre

SPCH 799	Problems in Speech (when offered as "The Rhetoric of Social Movements")
THTRE 782	Women in Theatre

Journalism and mass communication

JMC 612	Women and the Media

College of Education

Administration and foundations

EDAF 686	Topics in Education (when offered as "Programming for Women's Concerns")

Adult and occupational education

EDAO 650	Women Education and Work

Curriculum and instruction

EDCI 635	Curriculum Materials for Non-Sexist Teaching

College of Home Economics

Clothing, textiles and interior design

CT 440	Socio-Psychological Aspects of Clothing

Family and child development

FCDEV 250	You and Your Sexuality
FCDEV 300	Problems in Family and Child Development (when offered as "The Mature Woman: Middle Age and Later Years")
FCDEV 350	Family Relationships and Sex Roles
FCDEV 865	Human Sexuality

Family economics

FEC 600	Economic Status of Women

Honors Programs

Students at Kansas State University may enroll in honors programs in six colleges of the University: agriculture, architecture and design, arts and sciences, education, engineering, and home economics.

Questions Honors Students Often Ask
What is the purpose of KSU Honors Programs?

First, to identify gifted, enthusiastic, ambitious, highly imaginative students and to provide special courses which relate to but are different from regularly scheduled courses. Second, to provide this group of students with a sense of community by bringing them together in different academic situations so that they may benefit from both academic and social exchanges.

How do honors classes differ from regular classes?

Most honors classes are smaller in enrollment and depend more heavily upon student investigation and reporting than do regular classes. There is likely to be greater opportunity for students to set their own academic directions and to investigate issues and problems of their own particular interests. Honors classes are related to other classes in the University, however, in that they provide important basic introductions to various disciplines. The distinguishing characteristic of honors classes is the students themselves, who are typically more energetic, more critical, more inquisitive, and more committed to intellectual inquiry. Honors students love to learn.

What are the rewards of completing the honors program?

The real answer to this question is, of course, the intangible reward of having learned as much as one can in a course of study which has been challenging and exciting, whatever one's academic interests or professional goals. More specifically, the honors student may expect that critical skills will have been sharpened and investigative powers strengthened by the special projects which the honors program will have provided. The unique emphasis upon independent study and individualized curricular planning are other sources of academic growth for the honors student. Successful completion of the

honors program is recorded on a student's transcript and diploma, so that the effort made to complete the undergraduate degree in challenging circumstances will be clear to everyone who looks at an honors student's record.

What honors opportunities are available to me if I am enrolled in an honors program at KSU?

These opportunities may, perhaps, be best described by considering the individual honors programs of the University separately. All honors courses are open to all honors students, regardless of which college they enroll in.

College of Agriculture
The honors program in the College of Agriculture is designed to encourage students to recognize and respond to the challenges of scholarly inquiry in various areas of professional and scientific agriculture. It also enables students to investigate some of the related social, political, economic, and international issues which are of concern to agriculturalists everywhere.

The program provides honors students with greater curriculum flexibility, which encourages breadth and depth of study in one or more specific areas. It also exposes honors students to various areas of interest in agriculture. Each student in the program has a committee of three faculty members who assist the student in developing a program of study and in planning for independent research activities.

Eligible first semester freshmen or transfer students enroll in GENAG 290, Honors Program Orientation, which outlines details of the honors program. This class also presents a variety of speakers and course experiences not normally available to students. After being admitted to the honors program students may enroll in GENAG 298, Honors Colloquium in Agriculture, a course which encourages students to explore areas of mutual interest through forums, invited lecturers, visits to the campus by specialists in many fields, and other invited resource persons.

Topics in the colloquium are selected by students and include problems of current local or national interest which are particularly significant for agriculture students. Honors students enroll in GENAG 310, Honors Seminar, which involves lectures and special convocations selected by the student from an approved list. Students attend nine or more such convocations, many of which are of interest to the University as a whole, and report and discuss ideas gained from such convocations.

Juniors and seniors are typically engaged in independent research. As a preliminary to this research, some students enroll in GENAG 380, Honors Research Planning, in which they develop methods of screening pertinent literature and tools for the preparation of research proposals. They also obtain a knowledge of research services available at KSU. When an honors student's research has been completed, it is presented orally and in written form.

College of Architecture and Design
The honors program in the College of Architecture and Design is intended for those students who wish to be challenged by scholarly inquiry beyond the requirements of regular courses. Information can be obtained in the office of the Pre- Design Professions Department.

College of Arts and Sciences
The honors program in the College of Arts and Sciences is available to all students who enroll in the college. Freshmen register for the noncredit seminar, DAS 010, Introduction to the Honors Program in Arts and Sciences, which is offered every semester. In this seminar students become acquainted with the honors program and with the unique opportunities for them in the College of Arts and Sciences. They become acquainted with other students in the program, as well as with many members of the faculty in the college.

Students may elect special honors sections of lower-division courses including English Composition I. Participants in the program are required to take ENGL 125, English Honors Composition II.

After completing both the orientation course and English Honors Composition II, achieving a grade point average of 3.5 in one semester and an overall grade point of 3.3 for the freshmen year, students are admitted to upper-level honors course work. Sophomore seminars, junior colloquia, and a senior research project provide a rich array of honors experiences.

College of Education
The honors program in the College of Education is for those undergraduate students who have demonstrated high academic achievement. The major purpose of the honors program is to give selected students an opportunity to expand their knowledge of the teaching profession and to acquire a desire to be leaders in that profession. The program is designed for students in the College of Education and other students who are completing a teacher certification program through another college at Kansas State University.

Students in the education honors program will: explore at greater depth the professional education topics which are a part of the required program for teacher certification; encounter and pursue issues and special interests within the field of education; engage in forums which enable them to interact in challenging academic settings with faculty and other honor students within the University; and seek greater self-improvement as professional teachers.

Admission to the honors program in education will be granted after the student:

Presents a written statement of interest in the program;

completes the non-credit course, DED 010, Introduction to the Honors Program;

has a satisfactory interview with a faculty member of the Honors Program Coordinating Committee; and

attains a cumulative grade point average of at least 3.5 in a minimum of 9 semester hours of college work.

The academic work in the program includes a special section of EDAF 315, Educational Psychology II, EDAF 320, Honors Seminars, and DED 420, Honors Research. Honors seminars, offered each semester, focus on topics that broaden the knowledge of future teachers and give them insight into leadership responsibilities in their professions.

Honors Research provides the opportunity for students to work with professors having similar research interests. Research topics may be selected from a wide range of areas and they may reflect the student's particular area(s) of interest. Students are encouraged to develop creative approaches to problems pertinent to the educational process.

College of Engineering
The honors program in the College of Engineering is open to entering freshmen with high school averages or KSU entrance exam scores within the top 5 percent of students entering the college. Qualified transfer students and upperclassmen also may join the program, following individual evaluations of their academic records. Honors students are entitled to enroll in special sections of many basic courses that offer them opportunities for close association with faculty and with similarly gifted and motivated students in the College of Engineering.

In the sophomore and junior years students participate in a variety of seminars and colloquia which enrich and broaden their educational experience. Recent seminar and colloquium topics include, "Alternative Energy Sources," "Limits to Growth," "Priorities in the Use of Energy," and "Professionalism in Modern Society." Honors students also are encouraged to individualize their programs of study by a liberal course substitution policy which helps to meet the individual interests of honors students.

The culminating activity of the honors student is an independent research or design project which is carried out under the direction of a single faculty member. These projects provide not only close association with the faculty advisor but the opportunity to complete an extended investigation into a topic of personal interest and to express the creative abilities of the individual student. Among others, recent topics have included, "The Location of New Power Plants," "The Development of a Walking Robot," and "Response Measurements in Nuclear Detection Equipment."

College of Home Economics
Students in the College of Home Economics are selected for membership in the honors program according to ACT scores or, in the case of transfer students and other students who have completed some college course work, achievement of a requisite grade point average.

The program has several important objectives, one of which is to provide opportunities for students to explore areas outside the chosen area of concentration in home economics. Each member of the program completes two Home Economics Honors Seminars, or a three-hour home economics course at the 700 level or above, to be applied as an unrestricted elective or taken for graduate credit.

In the junior or senior year, students complete an honors project on a topic of their own choosing. They develop these projects with a home economics faculty member who serves as faculty advisor for the project and with the approval of the home economics honors coordinator. This independent study may involve extensive reading in a selected area, field study, experience with a research project, or participation in an academic activity that will increase the student's knowledge in a particular field of his or her interest.

Special seminars or mini-courses designed exclusively for honors program members are offered each semester. Some courses are experimental in nature and explore new areas in a subject matter field. Recent seminar topics include "Energy for Home Economists," "Food Additives Update," and "Computers and Consumer Education."

Each spring outstanding honors projects are selected and the students are recognized in a special way. Abstracts of all honors projects completed by members are compiled in a booklet which is distributed to honors program members and faculty.

Academic honoraries
Major academic honorary societies on the KSU campus include Phi Beta Kappa, the nation's oldest academic honorary, and Phi Kappa Phi. Honors students aspire to membership in these societies, as well as in many others which are more closely related to specific academic disciplines throughout the University.

Graduate School

R. F. Kruh, dean
John P. Noonan, associate dean
Robert P. Lowman, assistant dean for research services
Bert R. Biles, assistant dean for sponsored programs

101 Fairchild Hall
532-6191

Graduate study

Graduate study requires high academic achievement, and it extends the student's experience and capabilities within advanced, specialized areas of the chosen field. With 62 master's programs and 27 doctoral programs, Kansas State University offers preparation for a variety of scholarly and research careers as well as for a wide range of professional positions.

A common objective is to develop the capacities needed for independent study and research, for research is the mode of learning at the limits of knowledge. All doctoral programs and most master's programs develop such capacities by requiring students to carry out original research under the direction of faculty members expert in their fields. A crucial part of the process involves the preparation and publication of the research study in the form of a thesis or dissertation and a defense of the study before the faculty. In certain professional master's programs the emphasis is on preparation for professional practice, and, although a thorough understanding of research and research methodology is developed, the student may not have to complete a program of original thesis research in such cases.

Students pursuing graduate studies are enrolled in the Graduate School and are subject to the policies of the University's graduate faculty as well as the regulations of their specific programs.

Kansas State University has extensive resources for the conduct of graduate study and research, and the various programs are supported by a combination of state, federal, corporate, and private funding directed through the colleges, the Agricultural Experiment Station, the Engineering Experiment Station, and the Bureau of General Research.

Graduate degrees

Master of science. Major work leading to the degree master of science is offered in the following fields:

Agricultural economics
Agricultural education
Agricultural engineering
Agricultural mechanization
Agronomy
Anatomy and physiology
Animal sciences
Biochemistry
Biology
Chemical engineering
Chemistry
Civil engineering
Clothing, textiles, and interior design
Computer science
Crop protection
Education
Electrical engineering
Entomology
Family and child development
Family economics
Food science
Foods and nutrition
General home economics
Genetics
Geology
Grain science
Home economics education
Horticulture
Industrial engineering
Institutional management
Journalism and mass communications
Mathematics
Mechanical engineering
Microbiology
Nuclear engineering

Physical education
Physics
Plant pathology
Psychology
Recreation
Statistics
Surgery and medicine
Veterinary laboratory medicine
Veterinary pathology

Master of arts. Major work leading to the degree master of arts is offered in the following fields:

Economics
English
Geography
History
Mathematics
Modern languages
Political science
Radio and television
Sociology
Speech

Master of Accountancy. Major work leading to the degree Master of Accountancy is offered in the College of Business Administration.

Master of Architecture. Major work leading to the degree Master of Architecture is offered in the following fields: community design, environment/behavior, and preservation.

Master of Business Administration. Major work leading to the degree Master of Business Administration is offered in the College of Business Administration.

Master of Fine Arts. Major work leading to the Master of Fine Arts degree is offered in the Department of Art.

Master of Landscape Architecture. Major work leading to the degree Master of Landscape Architecture is offered in the College of Architecture and Design.

Master of Music. Major work leading to the degree Master of Music is offered in the Department of Music.

Master of Public Administration. Major work leading to the degree Master of Public Administration is offered in the Department of Political Science.

Master of Regional and Community Planning. Major work leading to the degree Master of Regional and Community Planning is offered in the Department of Regional and Community Planning, College of Architecture and Design.

Doctor of philosophy. Major work leading to the degree doctor of philosophy is offered in the following fields:

Agronomy
Animal sciences
Biochemistry
Biology
Chemistry
Computer science
Economics
(agricultural)
(general)
Education
Engineering
English
Entomology
Food science
Foods and nutrition
Genetics
Grain science
History
Home Economics
Horticulture
Mathematics
Microbiology
Pathology
Physics
Physiology
Plant pathology
Psychology
Sociology
Statistics

Degree requirements

Master's degree. Subject to the approval of the major department, the candidate may choose one of the following program options: (1) a minimum of 30 semester hours of graduate credit including a master's thesis of six to eight semester hours; (2) a minimum of 30 semester hours of graduate credit including a written report of two semester hours either of research or of problem work on a topic in the major field; or (3) a minimum of 30 semester hours of graduate credit in course work only, but including evidence of scholarly effort such as term papers, production of creative work, and so forth, as determined by the student's supervisory committee. Candidates for the Master of Regional and Community Planning degree must satisfactorily complete a minimum of 48 hours, and those working for the Masters of Fine Arts must complete 60 hours.

The student's program of study is prepared with the assistance of a supervisory committee consisting of the major advisor and two other graduate faculty members. The program is subject to the approval of the dean of the Graduate School upon recommendation of the advisory committee and should be submitted to the Graduate School prior to the end of the candidate's second term. The program may be modified on further recommendation of the advisory committee and the approval of the dean.

Three copies of theses and reports are required. All such reports and theses will be bound in cloth in accordance with specifications for Class A binding of the Library Binding Institute. To cover the cost of binding, students must deposit with their reports or theses a money order made out to KSU Library. The University Library will forward manuscripts to the bindery for the candidate. If students desire to publish all or part of their theses before the degree is conferred, major professors should notify the Graduate School in advance by letter. If approved by the major professor, master's theses may be placed on file with University Microfilms, which will also publish an abstract in *Master's Abstracts*. The current fee is $25. Since master's theses and reports are submitted as a part of degree requirements, the University retains the right to publish any portion as a contribution to knowledge. Patentable items created under University auspices are subject to the Regents' patent policy.

Successful completion of a final oral examination or comprehensive written examination or both shall be required of all master's degree candidates, the specific form being determined by individual departments. The final examination is administered by the advisory committee and may include a defense of the thesis or report, an interpretation of other scholarly products, or a testing of the student's understanding of the field(s) of study.

Doctor of philosophy. Normally, students admitted to doctoral study hold the master's degree, but some programs allow highly qualified students to proceed directly from the bachelor's degree to the doctorate. Completing a master's degree at Kansas State University does not automatically lead to admission to doctoral study, and a separate application must be made to the department and approved by the graduate dean for those intending to continue to the Ph.D.

Award of the degree of doctor of philosophy requires the successful completion of the equivalent of at least three years of full-time study beyond the baccalaureate as well as the completion of a major research study reported in a doctoral dissertation. Although a program of at least 90 credits is required, including at least 30 credits of dissertation research, completion of the program involves more than the accumulation of credits, and its duration is variable because the time required to finish the research study cannot be anticipated. In completing research and the resulting dissertation, students must adhere to the enrollment requirements described in the later section on registration and enrollment. Students admitted to doctoral programs must complete a year of full-time study in residence at Kansas State University as a degree requirement. Furthermore, a minimum registration of 30 hours in research is

required for the doctoral degree, not including work done toward a master's degree. Each candidate also must have completed at least 24 hours of regular degree credit in course work at Kansas State University. The foreign language requirement for the Ph.D. is determined as a matter of policy by the graduate faculty in each department. There is no such requirement in the following programs: agronomy, animal sciences, economics, education, food science, foods and nutrition, genetics, grain science, home economics, horticulture, pathology, plant pathology, psychology, and sociology. For all other programs the department should be consulted for details of the foreign language requirement. Where a language is required, it is understood that "foreign language" refers to languages other than English and that the language(s) required would have a significant body of literature relevant to the field. Required foreign language examinations are administered by the Department of Modern Languages. The language requirement must be satisfied before the student is admitted to candidacy.

During the first year of study beyond the master's degree or its equivalent, a supervisory committee is formed for each student. Committee members are proposed by the student and major advisor, subject to approval by the department head, and are appointed by the dean of the Graduate School. The committee consists of at least four members of the graduate faculty, one of whom is the major advisor who serves as chair, and at least one member shall be from a program different from that of the major advisor. The committee aids the student in the preparation of the program of study (which must be approved by the dean of the Graduate School) and has charge of the preliminary examination. Before the preliminary examination is arranged, the student must have on file in the Graduate School a program of study approved by the supervisory committee.

Ordinarily, at the close of the second year of graduate study and at least seven months before the final examination, the student must have met the preliminary examination requirement, successful completion of which is a necessary condition for admission to doctoral candidacy. The supervisory committee is responsible for recommending candidacy to the Graduate School office. Early in the graduate work a dissertation subject is chosen in the major field and approved by the supervisory committee. The dissertation must represent original investigation, contributing new knowledge or understanding to the candidate's field. On completion of at least three years of graduate study as prescribed by the supervisory committee and on completion of a dissertation, the candidate must pass a final examination. Final dissertation copies must be submitted to the dean of the Graduate School as a last requirement to be met for award of the degree. Inasmuch as the dissertation is submitted to the University in satisfaction of degree requirements, the University retains the right to use or publish any portion thereof as a contribution to knowledge. Moreover, patentable items created under University auspices are subject to the Regents' patent policy.

If consistent with departmental policy, the format of theses and dissertations may be in a style suitable for submission to a professional journal. In such cases, additional introductory material, bibliographies, and other supplementary information not to be submitted with the journal manuscript should be included as appendices.

All dissertations will be bound in cloth in accordance with specifications for Class A binding of the Library Binding Institute. To cover the cost of binding, the student must deposit a money order made out to an approved bindery with the dissertation. The University Library will forward manuscripts to the bindery for the candidate. Each dissertation is microfilmed and an abstract is published in *Dissertation Abstracts*. The current fee is $35.

If publication of the dissertation, in whole or in part, is to be made before the degree is conferred, the major professor should notify the dean of the Graduate School by letter in advance of such publication. Publication of any part of a dissertation should show, through footnote or otherwise, that the material is from a dissertation presented in partial fulfillment of the requirements for the degree doctor of philosophy in the subject department at Kansas State University. The written approval of the major professor should be filed in the Graduate School office in the case of any student seeking to copyright a dissertation.

Student responsibility. Graduate students are held responsible for knowing all published academic policies and degree requirements. They are likewise held responsible for knowing the regulations concerning the degree they plan to take and any special requirements within the department or academic unit. In addition, it is the student's responsibility to be informed regarding the University's policies as to the standard of work required for continued enrollment in the Graduate School. The Graduate School office should be consulted if additional information is needed.

Note to graduate students. Although it is customary for many graduate students to work continuously throughout the year, especially on thesis and dissertation research, the major advisor or certain supervisory committee members may not be available during the summer months. This is especially the case for faculty members on nine-month appointments who may be pursuing other activities off-campus during that time. Students should take such possibilities into account in scheduling various examinations and thesis or dissertation review.

Graduate credit. The course and research requirements for graduate degrees are expressed in terms of graduate credit. Graduate credit may not be earned by examination or by correspondence.

Grades. The following grades are used in the Graduate School: A, B, C, D, F, Credit, No Credit, Incomplete, and Withdrawn. A candidate for an advanced degree must have a 3.0 grade point average and make a grade of B or better in three-fourths of the credit hours attempted at KSU (excluding research, problems, internships, practicums, or other individualized study). To count for graduate credit the grade in a course must be C or better and no course may be counted more than once. Retaken courses remain on the transcript and are considered as part of the record. A graduate student's record will be reviewed after completion of six hours of graduate work.

Academic probation and dismissal. Admission to and continuation in the Graduate School depend upon a high level of achievement. Accordingly, students who do not maintain satisfactory progress in their studies are subject to being placed on probation or denied the privilege of continued enrollment in the University or in a specific graduate curriculum and, in either case, will be so notified by the dean of the Graduate School. No student on probation may receive a graduate degree. A graduate student may be denied continued enrollment in the University or in the graduate curriculum in the case of: a) failure to satisfy conditions necessary for removal from probationary status; b) the accumulation of six or more semester hours of work with grades of less than B, and/or a grade point average less than 3.0 exclusive of problems courses, practicums, internships, research, or other individualized study;

c) failure to meet published departmental requirements or failure in qualifying examinations, preliminary examinations, or final degree examinations; d) demonstrable lack of diligence in removal of assigned deficiency courses, in meeting published, degree requirements, or in maintaining normal progress toward a graduate degree; and e) failure to acquire mastery of the methodology and content of one's field sufficient to complete a successful thesis or dissertation. A student denied the privilege of continued enrollment may petition for reinstatement to the same curriculum or for admission to a different curriculum.

Non-graded work. At the discretion of the graduate faculty of the department* concerned, seminars or colloquia in which letter grading conflicts with the objectives intended may be offered on a credit-no credit or pass-fail basis rather than for a letter grade. The seminars and colloquia which are to be offered for credit-no credit or pass-fail shall be listed with the dean of the Graduate School. All courses on the program of study except research (report, thesis, or dissertation) and seminars or colloquia which have been approved for credit-no credit or pass-fail must be taken for letter grades. Independently of the program of study, additional courses may be taken on a credit-no credit or pass-fail basis with the approval of the major professor and the professor offering the course. These courses may not be applied toward a degree. No more than three hours of credit-no credit or pass-fail courses may appear on the program of study for the master's degree nor more than six for the Ph.D.

Validation of credits. Kansas State University credits which have been acquired more than six years prior to receiving a master's degree or seven years prior to receiving a Ph.D., require validation either by repeating the course, by passing an advanced course in the subject area, or by successfully completing a validation examination. Credits transferred from other universities may not be validated. However, credits in a doctoral program which have been earned as part of a master's degree remain valid and require no further validation. The department may choose which of the above methods is to be used for validation, and validation is to be completed at least one semester before the effective date of the degree. The preliminary examinations may not be used for validation.

Assistantships and fellowships

In order to support research, scholarship, and the acquisition of advanced degrees, the University offers several kinds of financial aid for graduate students. These include fellowships, traineeships, teaching assistantships, and research assistantships. Applications for graduate teaching assistantships and graduate research assistantships should be made directly to the department concerned before March 15 for the following academic year.

Graduate teaching assistantships and graduate research assistantships. Award of assistantships is based on the student's ability and promise and is usually made for either nine or twelve months. The maximum appointment is for half-time, but appointments for lesser fractions also may be made. Students are eligible for staff fees during each term in which they hold an appointment for at least 0.4 time. In addition, students who have been on appointments for at least 0.4 time during the spring term are eligible for staff fees during the following summer term even though they do not hold assistantships. The maximum enrollment for assistants is ten hours for half-time and twelve hours for 0.4 time appointments; the minimum is six hours in the regular terms and three in the summer. The corresponding maximums for a summer term are five and six hours respectively. Students desiring such appointments may obtain application blanks from the head of the department concerned.

In addition to assistantships, the University has a number of fellowships and traineeships available. Several departments also have federally supported traineeships available under the programs of the National Institutes of Health and other agencies.

Admission

Admission to graduate study does not imply admission to candidacy for an advanced degree. For a doctoral degree such candidacy is confirmed only upon successful completion of preliminary examinations and required language examinations.

Correspondence regarding admission to the Graduate School should be addressed to the appropriate department, which will supply application blanks and supplementary information about its program. Applicants should see that each undergraduate or graduate institution previously attended sends official transcripts directly to the appropriate department head. The application and transcripts should be received by the department at least three months before the time the student expects to enroll. All transcripts become part of the student's official file and may not be returned.

All new graduate students are required to fill out a medical history form for Lafene Student Health Center. International students must also submit a health certificate as part of the application

Entrance requirements

An application for admission to the Graduate School ordinarily implies the student's intention to work toward an advanced degree. To be considered for admission with full standing the applicant must have:

A bachelor's degree from an institution accredited by one of the regional accrediting associations,

Adequate undergraduate preparation in the proposed major field or equivalent evidence of an appropriate background for undertaking an advanced degree program, and

An undergraduate average of B or better in the junior and senior years.

For those whose grades do not meet the above standards, probationary admission may be granted, provided there is other evidence that the applicant has the ability to do satisfactory graduate work. Such evidence might include an excellent record of postgraduate work at another institution, or high scores on the Graduate Record Examination or the Miller Analogies Test. Those who wish to take the Graduate Record Examination should apply to Educational Testing Service, Box 955, Princeton, New Jersey 08540. The fee for either test must be paid by the applicant.

Students may be admitted provisionally if there is uncertainty in evaluating transcripts, as in the case of some international students, or if there are undergraduate deficiencies which must be removed.

*As used in the Graduate School the term department refers to interdepartmental graduate groups as well as to departmental faculties in the usual sense.

Once admitted, probationary and provisional students will be advised of other conditions to be met to attain full standing. Full standing is attained automatically upon completion of at least nine hours of course work for graduate credit with a grade of B or better, and upon the removal of any deficiency which was specified at the time of admission. Students admitted on probation may be denied continued enrollment if they do not achieve full standing or if they receive any grade less than a B.

Students who do not plan to work for an advanced degree may be admitted to the Graduate School as special students. Applications from such students should be sent to the department in which they plan to take courses or directly to the Graduate School together with a copy of the official transcript from the institution which granted the undergraduate degree. A special student who later wishes to enter a degree program must undergo the full review process. No more than nine semester hours earned as a special student may be transferred into a regular degree program.

International students
International applicants for admission to Kansas State University must, in most cases, meet the same academic standards for admission as those required of native students. In addition, international applicants holding nonimmigrant visas are required by U.S. Immigration regulations to be enrolled in a full course of study. University regulations require that international students and their dependents (if they are with the student) purchase or be in possession of a medical insurance policy or equivalent coverage. Medical insurance can be purchased on the campus or from other independent agencies.

The Graduate School requires each foreign applicant whose native language is not English to demonstrate facility in the English language by making a satisfactory score on the Test of English as a Foreign Language (TOEFL). This test is required in the interest of assuring that the student's progress toward a degree is not jeopardized by language difficulties. The TOEFL is offered several times a year in the student's home country through the Educational Testing Service, Princeton, New Jersey. Further information is available from the Graduate School office. Foreign students are advised to take the TOEFL as early as possible to avoid delays in processing their applications for admission.

In addition to the TOEFL all international students entering Graduate School will be required to demonstrate proficiency in written and oral English at the time of enrollment. Students who fail to meet this requirement must enroll in and satisfactorily complete ENGL 075, SPCH 065, or both, as appropriate.

A special orientation and advising program is conducted for new international students one week before the date of enrollment.

Registration and enrollment
Students who have been admitted to the Graduate School register and pay their fees during the regular registration period.

Students enrolled in short courses or workshops during the summer session may take regularly scheduled courses as long as they are able to attend all sessions of both. The enrollment should not exceed the maximum number of hours allowed in the summer session.

Not more than 16 hours, including those obtained in research, may be assigned in a single semester, nor more than nine hours during a summer session. If a part of the assignment is for undergraduate credit, a student may be assigned to 17 hours during a semester or nine hours during a summer session. Full-time staff members of the University may not be assigned to more than six hours in one semester, nor more than three hours in a summer session, and may enroll only with the permission of their supervisors. (See section on assistantships and fellowships for limitations applying to students holding assistantships.) These limitations apply to classes audited as well as classes for which credit is earned.

Any change in a student's enrollment should be carried out through the regular procedures and must be accompanied by the approval of the student's advisor and the dean of the Graduate School.

All graduate students who have matriculated at Kansas State University and are using faculty time and/or University facilities for research or other academic pursuits must be enrolled. The enrollment should reflect, as accurately as possible, the demands made on faculty time and use made of University facilities. Further, a graduate degree candidate must be enrolled during the semester in which the requirements for a degree are completed.

A student working for the Ph.D. must enroll during the session in which the preliminary examination is taken and subsequently in each semester (summer sessions excepted) until the degree requirements are met and the dissertation is accepted by the Graduate School. Failure to enroll will result in loss of candidacy. To regain candidacy, the student will be re-examined over the areas covered in his preliminary examinations in a manner to be determined by the supervisory committee. If it is necessary to interrupt progress toward the degree after the preliminary examination has been passed, the student (or the major professor) may petition for leave of absence for up to one year which subsequently may be renewed. Renewals for those who are meeting a military service requirement will be automatic. The petition must be submitted at least one month before the effective date of leave. Approval must be granted by the major professor, chair of the department or graduate group, and the dean of the Graduate School.

Candidates who do not live in the vicinity of Manhattan may make arrangements to enroll by mail but should request permission for doing so by writing the Graduate School office prior to the enrollment period.

Fees
See the general information section in the front of this catalog for detailed information about fees. Graduate teaching assistantships on regularly budgeted positions are eligible for reduction of the incidental fee in proportion to the level of their appointments.

Graduate study by seniors
Seniors at Kansas State University who are within two semesters of receiving the bachelor's degree may enroll for one or more courses for graduate credit, **provided they have at least a B average on their prior undergraduate work.** The total enrollment in such cases may not exceed 17 hours per semester or nine hours per summer session, and not more than 9 semester hours of graduate work may be accumulated in this way.

MASUA Traveling Scholar Program

As a member of the Mid-America State Universities Association, Kansas State University participates in the MASUA Traveling Scholar Program. Universities cooperating include: Iowa State University; University of Kansas; Kansas State University; University of Missouri at Columbia, Kansas City, Rolla, and St. Louis; University of Nebraska; University of Oklahoma; and Oklahoma State University.

The MASUA Traveling Scholar Program is designed to provide breadth and depth in the opportunities for graduate study offered at MASUA universities by permitting graduate students to study at another MASUA university where they may utilize unique facilities or specializations.

Graduate students at MASUA universities are eligible to participate in this program for a minimum of one term of enrollment. The student's major advisor initiates the proposal for the student's participation by contacting the professor at another MASUA university where the student wishes to study. The graduate dean at each MASUA university involved must concur in proposed participation. During the time of participation, the student will register for the appropriate number of hours and pay fees at the home university. Funds have been available on a competitive basis to pay a small dislocation allowance to MASUA scholars. Additional information concerning the MASUA Traveling Scholar Program is available in the Graduate School office.

Organizations, housing, loans

For information about student organizations, graduate student housing and loans, see the general information section of this catalog.

Interdepartmental degree programs

The Graduate School recognizes the importance of programs involving interrelationships between fields and has established graduate faculty groups to plan programs and supervise research in interdisciplinary fields. These programs are described in the following paragraphs. For information regarding these programs write to the chair of the appropriate program in care of the Graduate School.

Animal sciences

Don L. Good, chair

The interdepartmental graduate program in animal sciences is offered by faculty members in the departments of animal sciences and industry, biochemistry, statistics, biology, anatomy and physiology, and grain science and industry.

Candidates for the master of science or doctor of philosophy degrees in animal sciences may specialize in animal breeding, animal nutrition, animal production and management, animal reproduction, or animal products. The following general requirements will be adhered to:

1. The chair of the student's supervisory committee will be a member of the animal sciences subdivision in which the student wishes to specialize.

2. The student's undergraduate background will include adequate basic courses in animal agriculture, and biological and physical sciences. Students may be required to complete additional undergraduate courses in preparation for graduate study when the student's supervisory committee believes it is necessary.

3. The student's supervisory committee will be responsible for development of a program of study which meets any specific requirements established for the subdivision in which the student specializes.

4. The chair of the supervisory committee will direct and advise the student in planning and executing research.

5. There is no foreign language requirement.

6. All requirements of the Graduate School must be met.

Facilities for both basic and applied research include large and small experimental animals, modern laboratories, pilot plants for dairy, poultry, and meat products, and adequate library resources.

Students desiring to specialize in any subdivision should consult the appropriate chair for that area.

Animal breeding
R.R. Schalles, chair

Professors Craig, Dayton, Kemp, Schalles, and Wheat; Associate Professor W. Smith.

The major in animal breeding is designed to equip candidates for careers in animal genetics and breeding.

Degree candidates are expected to acquire training in genetics, animal breeding, and statistics. Additional courses may be required from other fields of biological and physical sciences. A typical program of study will include some of the following graduate-level courses: statistical and population genetics; poultry genetics; dairy cattle genetics; population genetics; animal breeding; statistics and experimental design; physiology; anatomy; and computer sciences.

Animal nutrition
G.L. Allee, chair

Professors Adams, Allee, Brent, Deyoe, Frey, Harbers, Hines, Koch, Morrill, Parrish, Riley, Sanford, Smith, and Ward; Associate Professor Bolsen; Assistant Professors Nagaraja and Pollmann.

Course work for candidates specializing in animal nutrition will include graduate-level work in areas such as nutrition, biochemistry, physiology, microbiology, statistics, computer science, grain science, and others necessary to meet the specific needs of individual candidates.

Animal production and management
R.H. Hines, chair

Professors Adams, Allee, Allen, Bolsen, Craig, Dikeman, Farmer, Good, Hines, Kiracofe, Morrill, Norton, Riley, Schalles, E. Smith, Ward, and Wheat; Associate Professor W. Smith; Assistant Professors Minton, Nichols, Pollmann, and Sigler.

Graduate programs in this area are planned to qualify candidates for careers in research, teaching, or extension. Major emphasis is on development of expertise necessary for decision making in modern animal industries.

Minimum undergraduate preparation for the program is: two courses in chemistry; college algebra plus one additional course

in mathematics or computer science; two courses in biological science; three courses in economics and/or business administration; and two courses in animal production and management.

Candidates will acquire proficiency in statistics and in two of the following areas: animal nutrition, animal breeding, and animal physiology.

Courses to complete the program of study may be selected from the following suggested areas (departments) in accord with the interests of the student and upon approval of the student's supervisory committee: animal sciences and industry, agricultural engineering, agronomy, animal behavior, biology, business administration, communications, mathematics, computer science, dairy and poultry sciences, economics, education, food sciences, and grain science.

Animal products
Donald Kropf, chair

Professors Allen, Bassette, Cunningham, Dikeman, and Kropf; Associate Professors Fung, Hunt, and Kastner; Assistant Professor Jeon.

The faculty offers a specialization in meat, dairy, and poultry products as related to their production. Course work will be required to meet the specific needs of students as determined by supervisory committees.

Animal reproduction
G.H. Kiracofe, chair

Professors Able, Craig, Farmer, and Kiracofe; Associate Professors Corah, D. Davis, and Spire; Assistant Professors Sigler and J. Stevenson.

Degrees are designed to equip students for vocations in general animal reproduction. Study will be in the areas of reproductive endocrinology, developmental reproductive anatomy, environmental effects on reproduction, milk secretion, and applied use of reproductive control techniques.

Degree candidates will acquire training in physiology, biochemistry, and statistics. Additional course work may be required to meet specific needs of individual candidates.

Biochemistry
W.E. Klopfenstein, chair

Professors Bode, Burkhard, Clarenburg, Cox, Hedgcoth, K. Kramer, Nordin, Oehme, Reeck, Roche, Roufa, Seib, and Tsen; Associate Professors B. Cunningham, L. Davis, Klopfenstein, Marchin, and Mueller; Assistant Professors Muthukrishnan and L. Takemoto.

The Graduate Biochemistry Group has the responsibility for the graduate biochemistry program leading to the M.S. and Ph.D. degrees and is directly responsible to the dean of the Graduate School. The Graduate Biochemistry Group consists of biochemists, regardless of department or college affiliation, who are approved for membership in the graduate biochemistry faculty. An executive committee composed of three members of the Graduate Biochemistry Group and elected by the group serves an administrative function. One member of the executive committee serves as chairman of the group. Units of the University currently cooperating in the program are the departments and areas of biochemistry, physiological sciences, grain science and industry, surgery and medicine, and the division of biology.

Entering graduate students must meet the entrance requirements of the Graduate School and must have completed one year of organic and physical chemistry; differential and integral calculus; one semester of analytical chemistry; and a course in biology, including a laboratory. The student entering this program with considerable training in biology must meet these requirements, but may satisfy the physical chemistry requirement by including the year of physical chemistry as a part of the graduate program.

Crop protection
Fred Schwenk, chair

Professors Blocker, Campbell,* Geyer, L. Johnson, Schwenk, and Thompson;* Associate Professors Claflin, Ehler,* Pedersen, and Poston; Assistant Professor Bockus.*

*Crop Protection Curriculum Steering Committee

Graduate work leading to a master of science degree in crop protection is offered through an interdepartmental program. It is administered by the Crop Protection Steering Committee composed of faculty from the departments of agronomy, entomology, horticulture, forestry, and plant pathology.

The curriculum is designed to train students to become professional crop protection specialists. Graduates may find employment with federal and state agencies, with industries serving agriculture, as private practitioners, and with individuals and organizations engaged in crop production. A program of study will be developed to meet the needs of each student by a supervisory committee drawn from the crop protection graduate faculty. Course work is concentrated in the areas of computer science, crop protection, entomology, plant pathology, nematology, statistics, and weed science. Students will generally complete the non-thesis option of the master of science degree.

In addition to meeting the general entrance requirements set by the Graduate School, students must have or complete introductory course work in biology, crops, entomology, plant pathology, and weed management.

Engineering
N.D. Eckhoff, chair

Professors Ahmed,** Akins,* Appl, Azer, Bennett, Best, Bissey, Chung, Clark, Cooper, Crank, Dahl, Donnert, Eckhoff,* Erickson, Fan, Faw, Gallager, Gorton, Haft, Hodges,* Huang, Hummels,* Hwang, W.H. Johnson, Kipp, Kirmser, Koelliker, Koepsel, Konz,* Kyle, Larson, Lee, Lenhert, Lester,** Lindholm, Lindley, Lucas, Manges,* J.C. Matthews, Merklin, Miller, Mingle, Rathbone, Rohles, Russell, Shultis, Simons, Smaltz, Smith,* Snell, Spillman, Swartz, Thompson, Tillman, Turnquist, Walawender, Walker,* and Williams; Associate Professors Ball, Beck, Burton, D.L. Grosh, L.E. Grosh, Hu, G.L. Johnson, Jones, Knostman, Lai, Roth, Sinha, Steichen, and Stevenson; Assistant Professors Chang,* Cottom, Eggeman, Fowler, Glasgow, Haque, Hayter, A.P. Mathews, McEnroe, Shrock, and Vaithianathan.

*Members of College of Engineering Graduate Committee
**Adjunct Professors

The Graduate Committee of the College of Engineering coordinates the graduate program leading to the Ph.D. in Engineering degree. The committee consists of a representative from each academic department of the college, with the ex-

ception of engineering technology, which offers the B.S. degree only. The primary function of the committee is to administer the graduate program policies established by the College of Engineering graduate faculty and the Graduate School.

Within the doctoral program leading to the Ph.D. in Engineering, the traditional areas of engineering are represented by the departments of agricultural engineering, chemical engineering, civil engineering, electrical engineering, industrial engineering, mechanical engineering, and nuclear engineering, with emphases in systems engineering, materials science, energy processes, bioenvironmental engineering, and information processing.

Entering graduate students must meet the entrance requirements of the Graduate School and must have completed the B.S. degree in a field of engineering or a closely related area of science.

Food science

D.Y.C. Fung, chair

Professors D. Allen, Bassette, Bowers,* Brent, Caul, Chung, F. Cunningham, Deyoe, Dikeman,* L. Erickson, Fan, B. Fryer, Greig, L. Harbers, Hoseney,* Iandolo, Kropf,* Kyle, Mugler, P. Nordin, Paulsen, Ponte,* Reeck,* Seib, Spears, Tsen, Vaden, and Ward; Associate Professors Canter, Fung,* Hunt, Kastner, F. Lai, Roach, C. Setser, and Zayas; Assistant Professors A. Davis, Grunewald, C. Harbers, Jeon, and Stone.*

*Members of the Graduate Food Science Coordinating Committee

Graduate work leading to the degrees master of science and Doctor of Philosophy in Food Science is offered in the departments of: agricultural economics; agricultural engineering; agronomy; animal sciences and industry; biochemistry; chemical engineering; dietetics, restaurant and institutional management; grain science and industry; foods and nutrition; horticulture; and the division of biology.

Requirements for entering graduate study in food science are: (1) mathematics, including college algebra; (2) analytical and organic chemistry; (3) a course in physics; (4) an introductory course in microbiology; and (5) a course in botany, zoology, or biology. When the student's committee believes it necessary, the student will be required to take additional undergraduate courses to prepare more completely for the individual program.

Candidates for degrees are expected to select courses so as to give adequate coverage in several food areas, with primary emphasis in one or more areas.

The M.S./Ph.D. program of study shall be expected to include courses in biochemistry, statistics, food microbiology, food chemistry, and food processing/food engineering. No more than six credit hours at the 500 level will be accepted. One credit of Food Science Colloquium (FN 981) for the M.S. degree and two credits of Food Science Colloquium for the Ph.D. degree shall be included. There is no foreign language requirement.

Course requirements will be evaluated by the student's supervisory committee, which will include at least one member of the Food Science Coordinating Committee. The chairman of the coordinating committee must approve members of the student's advisory committee and the program of study.

Facilities are available for a comprehensive range of teaching and research activities including pilot plants for milling, baking, dairy products, poultry products, meats, and quantity food production. Laboratories are equipped for research involving food processing, sensory evaluation of food, biochemistry, heat transfer, fluid flow, filtration, evaporation, microbiology, rheology, freeze drying, and nutrition.

Following are selected courses in food science:

Agricultural Engineering

AGE 650	Agricultural Systems Engineering
AGE 700	Agricultural Process Engineering

Animal Sciences and Industry

ASI 502	Principles of Dairy Foods Processing
ASI 550	Dairy Bacteriology
ASI 606	Instrumental Analysis of Food and Agricultural Products
ASI 671	Meat Selection and Utilization
ASI 694	Food Plant Management
ASI 695	Quality Assurance of Food Products
ASI 635	Poultry Meat Technology
ASI 630	Egg Science
ASI 711	Food Fermentation
ASI 713	Rapid Methods and Automation in Microbiology
ASI 715	Chemistry of Foods
ASI 725	Meat Packing Plant Operation
ASI 777	Meat Technology
ASI 818	Fundamentals of Meat Processing and Preparation
ASI 850	Analytical Techniques in Animal Sciences and Industry
ASI 930	Advanced Meat Science

Biochemistry

BIOCH 655/656	Biochemistry I and Laboratory
BIOCH 670	Principles of Animal Nutrition
BIOCH 790	Physical Biochemistry
BIOCH 830	Animal Nutrition Techniques
BIOCH 840	Intermediary Metabolism
BIOCH 910	Lipids
BIOCH 930	Proteins
BIOCH 940	Chemistry of Carbohydrates
BIOCH 950	Enzyme Chemistry
BIOCH 960	Advanced Animal Nutrition

Chemical Engineering

CHE 530	Transport Phenomena
CHE 550	Chemical Reaction Engineering
CHE 715	Biochemical Engineering
CHE 725	Biotransport Phenomena
CHE 805	Selected Topics in Biochemical Engineering

Dietetics, Restaurant and Institutional Management

DRIM 635	Foodservice Equipment and Layout
DRIM 665	Foodservice Administration
DRIM 805	Computer-assisted Foodservice Management
DRIM 890	Food Production Management

Biology

BIOL 520	Microbiology of Foods

Engineering Technology

ET 640	Food Processing Operations

Foods and Nutrition

FN 501	Food Science
FN 502	Principles of Nutrition
FN 610	Nutrition Needs Throughout the Life Cycle
FN 612	Principles of Food Product Development and Control
FN 620	Sensory Analysis of Foods
FN 700	Community Nutrition

FN 712	Diet Therapy
FN 750	Nutritional Aspects of Food Processing and Preparation
FN 760	Fundamentals of Food Flavor Analysis
FN 790	Food Research Techniques
FN 814	World Nutrition
FN 816	Application of Food Flavor Analysis
FN 817	Nutrition and Aging
FN 710	Bionutrition
FN 720	Food Systems
FN 960	Proteins in Food Systems
FN 907	Food Dispersions
FN 908	Carbohydrates in Food Systems
FN 910	Advanced Nutrition: Carbohydrates and Lipids
FN 911	Advanced Nutrition: Proteins and Amino Acids
FN 912	Advanced Nutrition: Minerals
FN 913	Advanced Nutrition: Vitamins
FN 981	Food Science Colloquium

Grain Science and Industry

GRSC 500	Milling Technology I
GRSC 602	Cereal Science
GRSC 625	Flour and Dough Testing
GRSC 634	Bakery Technology
GRSC 635	Baking Science I
GRSC 737	Baking Science II
GRSC 651	Food and Feed Plant Sanitation
GRSC 661	Qualities of Feed and Food Ingredients
GRSC 730	Milling Technology II
GRSC 810	Advanced Cereal Chemistry
GRSC 710	Fundamentals of Grain Storage
GRSC 711	Principles of Food Analysis
GRSC 715	Fundamentals of Processing Grains for Food
GRSC 801	Enzyme Applications

Horticulture

HORT 700	Vegetable Crop Physiology
HORT 792	Handling and Processing Fruits and Vegetables

Genetics

G.H. Liang, chair

Professors Barnett, Bode, Brent, Clayberg,* Craig,* Hatchett, Liang,* Manney,* Nassar,* Pittenger, Reeck, Schalles, Sorenson, Wasson, and Wheat; Associate Professors Browder, Chatterjee, Davis,* Denell,* Gill,* Rodkey, and Tomb; Assistant Professors Currier, Eversmeyer, Muthukrishnan, Rodgers, Schapaugh, Sears, and Williams.

*Members of the Genetics Coordinating Committee.

Graduate work leading to the M.S. and Ph.D. degrees in genetics is administered through an interdepartmental program. The program is supervised by a Genetics Coordinating Committee of faculty from participating departments which sets the academic requirements for degrees and assigns one or more of its members to the supervisory committee of each student. A graduate student is associated with the department to which the major professor belongs, but the graduate degree is awarded in genetics.

In addition to the general entrance requirements set up by the Graduate School, students in genetics should have two courses of inorganic chemistry, one course of organic chemistry, an introductory course in genetics, and six additional hours of biological sciences. Students who do not meet these requirements may make up these deficiences either by examination or by enrolling in the necessary courses during the first year of graduate study. Although the program of study is determined by each student's supervisory committee, the Genetics Coordinating Committee has outlined certain specific requirements. Depending on the area of specialization, a student should fulfill the minimum course requirements in either of the following broad categories:

Genetics Option 1:

Master's degree

a statistics course (700 level)
a course in molecular biology or molecular genetics
two additional genetics courses from those listed below
a minimum of one hour of graduate level seminar

Ph.D. degree

a statistics course (700 level)
a course in molecular biology or molecular genetics
a biochemistry course (500 level or above)
four additional genetics courses from those listed below
a minimum of three hours of graduate level seminar

Genetics Option 2:

Master's degree

a statistics course (500 level or above)
a course in classical genetics or breeding (crops and animals)
two additional genetics courses from those listed below
a minimum of one hour of graduate level seminar

Ph.D. degree

a statistics course (500 level or above)
a course in classical genetics or breeding (crops and animals)
a biochemistry course (700 level)
four additional genetics courses from those listed below
a minimum of three hours of graduate level seminar

Selected genetics courses:

Agronomy

AGRON 770	Plant Genetics
AGRON 785	Applied Plant Breeding
AGRON 830	Quantitative Genetics in Relation to Plant Breeding
AGRON 850	Advanced Plant Breeding I

Animal sciences and industry

ASI 749	Advanced Animal Breeding

Biochemistry

BIOCH 510	General Plant Biochemistry
BIOCH 521	General Biochemistry
BIOCH 655	Biochemistry I

Biology

BIOL 540	Molecular Biology
BIOL 615	Cytogenetics
BIOL 651	Molecular & General Genetics
BIOL 675	Genetics of Microorganisms
BIOL 750	Molecular & Cellular Biology
BIOL 858	Regulation of Gene Expression

Horticulture

HORT 740	Horticultural Plant Breeding
HORT 910	Topics in Plant Breeding
HORT 930	Topics in Plant Genetics

Plant pathology

PLPTH 815	Advanced Techniques in Plant Cytogenetics

Descriptions of these courses can be found in the respective departmental sections of this catalog.

The participating departments are agronomy, animal sciences and industry, Division of Biology, biochemistry, horticulture, physics, plant pathology, and statistics.

No foreign language is required; however, if the supervisory committee believes a reading knowledge of foreign languages is essential to a particular research problem, it may be required.

Home economics

Stephan R. Bollman, chair

Professors Bollman, Hoeflin, Huyck, Jurich, Kennedy, Morse, Rekers, Spears, Stith, and Vaden; Associate Professors Bergen, Bresee, Canter, Davis, Hanna, Lindamood, McCullough, Munson, Peterson, Poresky, Reagan, Roach, Rollins, Russell, and Scheidt; Assistant Professors Annis, Holcomb, McNeil, Schumm, Villasi, and Wanska.

The Ph.D. program in home economics is interdepartmental and is designed for advanced study of the family—its development, its effective utilization of resources, and its critical role as determinant of future generations. This Ph.D. program is interdisciplinary, with subject matter integrated from home economics fields along with related fields outside the college. A home economics emphasis is developed for each student relative to a family concern such as: effective utilization of family resources; family decision making; family interaction and development throughout the family life cycle; cultural, economic, and sociopsychological and technological influences of clothing, textiles, equipment and housing of families; and effectiveness of institutions serving families.

The Ph.D. program is offered by the graduate faculty members of the departments of clothing, textiles, and interior design; dietetics, restaurant and institutional management; family and child development; and family economics. Programs of study include a minimum of 90 credit hours beyond the bachelor's degree, with at least 30 hours course work in the major area, 30 hours in dissertation research, and the remainder in supporting courses.

In addition to programs of study within the four departments (clothing, textiles, and interior design; dietetics, restaurant and institutional management; family and child development; and family economics) specific areas of specialization are: family life education and consultation; family and consumer economics; housing and design; marriage and family therapy.

The Ph.D. program is administered by a coordinating committee composed of five graduate faculty members elected from the participating departments. The coordinating committee is responsible for implementation of policy regarding admission to the doctoral program, approval of major professor and supervisory committee members, and review of guidelines for development of programs of study.

Inquiries should be directed to: Chair, Coordinating Committee, Ph.D. in Home Economics Program, Justin Hall, Manhattan, Kansas 66506.

Veterinary pathology

Robert K. Ridley, chair

Professors Anderson, Anthony, Bailie, Coffman, Coles, Cook, Dennis, Keeton, Kruckenberg, Leipold, Leland, Minocha, Mosier, Moore, Oehme, Phillips, Smith, Trotter, Strafuss, and Vestweber; Associate Professors Burroughs, Keeton, Kennedy, Ridley, and Schoning; Assistant Professor Howard.

Graduate programs are offered by the departments of pathology, laboratory medicine, surgery and medicine, and veterinary diagnosis in the College of Veterinary Medicine leading to the degree(s) of master of science and doctor of philosophy.

Areas of study in this program include veterinary microbiology, virology, parasitology, public health, toxicology, and clinical and anatomic pathology. Requirements for entering graduate study in pathology and clinical pathology are completion of the degree of Doctor of Veterinary Medicine or equivalent and approval of the executive committee of the Pathology Group and the dean of the Graduate School.

Center for Aging

George R. Peters, director
Edith L. Stunkel, assistant director

The Center for Aging coordinates gerontology education, research, and service across six of the eight University colleges: agriculture, architecture and design, arts and sciences, business administration, education, and home economics. In addition, faculty and staff from the Division of Cooperative Extension, Division of Continuing Education, and the University for Man participate on the three center committees of education, research, and outreach. The Education Committee oversees the gradute emphasis in gerontology program and the undergraduate secondary major in gerontology.

Graduate emphasis in gerontology. The graduate emphasis in gerontology program provides students the opportunity to integrate knowledge received in their major professional disciplines with a program of academic study and field experience in gerontology. It is designed to be taken concurrently with, or in addition to, a disciplinary graduate degree program at either the master's or doctorate level. The total program requires 14 to 18 credit hours, some of which may overlap with degree requirements for the student's disciplinary degree. Specific requirements include:

One upper-level graduate gerontology course (700 or above) in the student's own discipline (3 credit hours)

Two graduate level gerontology courses (500 or above) in disciplines other than the student's own (6 credit hours)

Practicum-colloquium in a gerontological setting (3 credit hours)

Gerontological focus integrated into master's project, thesis, report, oral examination or Ph.D. dissertation (2-6 credit hours)

Currently nineteen graduate-level gerontology courses are offered regularly by departments across campus. Departments also create special offerings to meet student interest. The Education Committee can review unique requests on an individual student basis.

Center for Aging programs. The undergraduate secondary major in gerontology is also offered through the Center for Aging. Further details are located in the gerontology section under intercollegiate secondary major programs. In addition to the graduate and undergraduate curricula, the Center for Aging offers a wide range of educational services including a newsletter, small gerontological library, seminar series, undergraduate assistantships, and programs for older adults. Inquiries about curricula or other programs should be directed to the Center for Aging, Fairchild Hall, Manhattan, Kansas 66506, 532-5945.

International trade studies

Committee on International Trade Studies: Robert Lynn, Paul Kelley, William Siddall, Charles Deyoe, Joseph Hajda, Cornelia Flora

International trade has grown more rapidly since World War II than the world's output of goods and services. As a result, the world's economy has become increasingly internationalized. Foreign trade has become progressively important both for U.S. industry and agriculture.

Kansas State University's mission as a land-grant university is irrevocably linked to this internationalization and its impact on economic, political and social processes. Recognizing that the whole character of the modern world is influenced by past and present international trade, the University provides students with the opportunity to broaden their knowledge and understanding in this important area. KSU offers a full range of academic programs reflecting the notion that international trade exchanges goods, capital, and services and fosters the transmission of ideas about technological advance and scientific achievement, standard of living and ways of life, and political, diplomatic, and economic arrangements. Several departments focus on developing appropriate skills and interests at the graduate level. Students desiring to develop a proficiency in international trade can choose from the following master's programs:

Business administration

The Master of Business Administration degree offers students strong preparation for careers in international trade. Most courses in the MBA program are carefully structured to contain the "worldwide dimension" required by the AACSB accreditation standards. The 800-level elective course required in the MBA program may be selected from KSU courses that are directly related to international trade: ECON 823, Advanced International Economics, is an example of such a course. In addition, students may take work over and above the required 33 hours from among the courses listed below.

Economics and agricultural economics

The Master of Science in Agricultural Economics and the Master of Arts in Economics offer students opportunities for careers in international trade. Students interested in such careers may include in their programs of study trade-related elective courses in agricultural economics, economics, and other departments. The courses listed below are suggested for consideration.

Geography

The Master of Arts in Geography offers students an opportunity to prepare for a career in international trade. Students must complete all requirements for the M.A. degree as set forth in the geography section of this catalog. The following courses are required: GEOG 740, Geography of Transportation; a 600-level regional geography course; and a minimum of six hours of trade-related courses from outside the department from those listed below.

Grain science

The Master of Science in Grain Science may prepare students for a career in international trade. Required departmental courses give students a background in grain quality and processing. In addition students should take AGEC 641, Seminar in Export Marketing, and additional hours from the following list that are directly related to international trade.

Political science

The Master of Arts in Political Science and the Master in Public Administration degrees offer students preparation for careers in international trade. Students working on the M.A. degree should take the required courses in political science. In addition, they may take a minimum of 6 hours from trade-related courses outside the department. Students in the MPA program may focus on international trade by taking a minimum of 12 hours from among illustrative courses listed below.

Sociology

The Master of Arts in Sociology may prepare a student for a career in international trade when based upon an undergraduate preparation which includes work in basic economics as well as sociology and other social sciences. This broader preparation may assist the student in analyzing societal trends and developments which influence the bases of international transfers of goods, services and technologies, and assist in anticipating needs and consequences of these transfers. In addition to those required for a master's degree, courses may be selected from those listed below.

Selected courses dealing with international trade:

AGEC 615	International Agricultural Development
AGEC 631	Principles of Transportation
AGEC 710	Quantitative Methods in Agricultural Marketing Firms
AGEC 940	Seminar in World Foods Systems/Trade Policy
ANTH 511	Cultural Ecology & Economy
ECON 681	International Trade
ECON 823	Advanced International Economics
FINAN 654	International Financial Management
GEOG 740	Geography of Transportation
MANGT 690	International Management
MKTG 544	International Marketing
POLSC 741	International Relations
POLSC 743	American Foreign Policy
POLSC 747	International Law

Also, a minimum of 12 hours of study of a modern language is regarded as a necessity for those interested in international trade.

College of Agriculture

ABLE, BILLY V., Prof. of Animal Sciences and Industry; Meat Animal Physiologist, Agr. Exp. Sta. (1970). BS 1962, Okla. St. Univ.; MS 1964, Miss. St. Univ.; PhD 1970, Univ. of Ky. (GF)

ABMEYER, ERWIN, Asst. Prof. of Horticulture Emeritus (1934). BS 1933, Kan. St. Univ.

ADAMS, ALBERT W., Prof. of Animal Sciences and Industry; Research Poultry Scientist, Agr. Exp. Sta. (1962). BS 1951, MS 1955, Kan. St. Univ.; PhD 1964, S.D. St. Univ. (GF)

ALBRECHT, MARY L., Asst. Prof. of Horticulture; Research Horticulturist, Floricultural Crops, Agr. Exp. Sta. (1980). BS 1975, Rutgers Univ.; MS 1977, PhD 1980, Ohio St. Univ. (GF)

ALBRECHT, WILLIAM C., Res. Asst. of Entomology (1981). BS 1976, Ohio St. Univ.

ALLEE, GARY L., Prof. of Animal Sciences and Industry; Research Swine Nutritionist, Agr. Exp. Sta. (1970). BS 1966, MS 1967, Univ. of Mo.; PhD 1970, Univ. of Ill. (GF)

ALLEN, DELORAN M., Prof. of Animal Sciences and Industry; Meat Animal Research Scientist, Agr. Exp. Sta. (1966). BS 1961, Kan. St. Univ.; MS 1963, Univ. of Idaho; PhD 1966, Mich. St. Univ. (GF)

AMBURGEY, VICTOR A., Res. Asst. of Plant Pathology (1983). BS 1983, Kan. St. Univ.

ANDERSON, KENNETH E., Instr. of Animal Sciences and Industry (1983). BS 1979, Southern Ill. Univ.

ANDERSON, KLING L., Prof. of Agronomy Emeritus (1936). BS 1936, Univ. of Calif.; MS 1938, Kan. St. Univ.; PhD 1951, Univ. of Neb.

APLEY, KATHRYN LYNNE, Res. Asst. of Agronomy (1982). MS 1982, Ore. St. Univ.

ARGENT, ROBERT M., Res. Asst. of Forestry (1984). MS 1983, Va. Polytechnic Institute and St. Univ.

ARMBRUST, DEAN V., Assoc. Prof. of Agronomy; Research Soil Scientist, Wind Erosion Research Unit, U.S.D.A., ARS (1968). BS 1960, MS 1961, PhD 1973, Kan. St. Univ. (Adjunct Appointment) (GF)

ASRAR, GHASSEM, Res. Assoc. of Agronomy (1981). BS 1974, Paklani Univ., Iran; MS 1978, MS 1980, PhD 1981, Mich. St. Univ.

ATKINSON, C. HARRY, Assoc. Prof. of Agronomy Emeritus (1949). BS 1931, MS 1933, Pa. St. Univ.

AXE, JOY B., Res. Asst. of Animal Sciences and Industry (1983). MS 1981, Kan. St. Univ.

BAKER, DOYLE C., Asst. Prof., International Agriculture Program (1982). BA 1973, Univ. of Calif.-Santa Barbara; MA 1977, George Washington Univ.; PhD 1979, Mich. St. Univ.

BAKER, JEFFREY T., Res. Asst. of Agronomy (1980). BS 1978, Miss. St. Univ.

BANBURY, EVANS E., Prof.; Emeritus, Colby Branch Agr. Exp. Sta. (1946). BS 1940, Kan. St. Univ.

BANDYK, CATHRYN A., Res. Asst. of Agricultural Economics (1982). BS 1982, Kan. St. Univ.

BARNETT, BRIAN D., Res. Asst. of Grain Science and Industry (1982). BS 1979, Kan. St. Univ.

BARNETT, FRANCIS L., Prof. of Agronomy; Forage Research Geneticist, Agr. Exp. Sta. (1956). BS 1952, McGill Univ. (Canada); MS 1954, PhD 1956, Pa. St. Univ. (GF)

BASSETTE, RICHARD, Prof. of Animal Sciences and Industry; Dairy Foods Research Chemist, Agr. Exp. Sta. (1958). BS 1952, MS 1955, PhD 1958, Univ. of Md. (GF)

BAXTER, WILLIAM M., Asst. Prof. and Asst. to the Head, Fort Hays Branch Agr. Exp. Sta. (1949). BS 1949, Kan. St. Univ.

BEEMAN, RICHARD W., Asst. Prof. of Entomology; USDA Grain Marketing Research Center (1980). BS 1970, MS 1974, PhD 1977, Univ. of Wis. (Adjunct Appointment) (GF)

BEHNKE, KEITH C., Asst. Prof. of Grain Science and Industry; Feed Technology Research Scientist, Agr. Exp. Sta. (1977). BS 1968, MS 1973, PhD 1975, Kan. St. Univ. (GF)

BELL, K.O., Asst. Prof. of Entomology, Entomologist II of Entomology Div., KSBA, Survey Entomologist (1977); BS 1961, MS 1965, Univ. of Ark.; PhD 1971, Kan. St. Univ. (Adjunct Appointment)

BENNETT, ROBERT E., Asst. Prof. of Grain Science and Industry; American Institute of Baking (1978). BS 1967, MS 1969, PhD 1976, Kan. St. Univ. (Adjunct Appointment)

BERHE, TAREKE, Asst. Prof. of Agronomy (1982). PhD 1981, Univ. of Neb.

BIDNEY, DENNIS L., Adjunct Asst. Prof. of Plant Pathology. BS 1973, Graceland Col.; PhD 1957, Kan. St. Univ.

BIDWELL, ORVILLE W., Prof. of Agronomy; Soil Survey Research Scientist, Agr. Exp. Sta. (1950). AB 1940, Oberlin Col.; BS 1942, PhD 1949, Ohio St. Univ. (GF)

BIERE, ARLO WILLIAM, Prof. of Agricultural Economics; Research Agr. Econ. Natural Resources; Regional and Community Dev., Agr. Exp. Sta. (1968). BS 1963, Univ. of Neb.; MA 1967, PhD 1968, Univ. of Calif. (GF)

BLOCKER, H. DERRICK, Prof. of Entomology; Research Entomologist, Taxonomy of Leafhoppers and Grassland Insects, Agr. Exp. Sta. (1965). BS 1954, MS 1958, Clemson Univ.; PhD 1965, N.C. St. Univ. (GF)

BLOCKER, MARTHA B., Res. Asst. of Agronomy (1976). BS 1955, Queens Col.

BLOOM, JILL, Res. Asst. of Plant Pathology (1980). BS 1980, Penn. St. Univ.

BOCKUS, WILLIAM W., Asst. Prof. of Plant Pathology; Research Cereal Crop Pathologist, Agr. Exp. Sta. (1978). BS 1972, Univ. of Calif.; MA 1974, Calif. St. Univ.; PhD 1978, Univ. of Calif. (GF)

BOLSEN, KEITH K., Assoc. Prof. of Animal Sciences and Industry; Beef Cattle Research Nutritionist, Agr. Exp. Sta. (1971). BS 1966, MS 1967, Univ. of Ill.; PhD 1971, Univ. of Neb. (GF)

BOLTE, L.C., Asst. Prof. of Grain Science and Industry; USDA (1971). BS 1958, Kan. St. Univ. (Adjunct Appointment)

BOURNE, MICHAEL L., Instr. of Agronomy; Research Agronomist Plant Science, Agr. Exp. Sta. (1982). BS 1979, Okla. St. Univ.; MS 1981, Mich. St. Univ.

BRANDNER, LOWELL, Prof. Emeritus (1947). AB 1937, BS 1937, Emporia St. Univ.; MS 1951, Kan. St. Univ.; PhD 1960, Univ. of Wis. (GF)

BRENT, BENNY E., Prof. of Animal Sciences and Industry; Animal Research Nutritionist, Agr. Exp. Sta. (1966). BS 1959, MS 1960, Kan. St. Univ.; PhD 1966, Mich. St. Univ. (GF)

BRETHOUR, JOHN R., Prof.; Beef Research Scientist, Fort Hays Branch Agr. Exp. Sta. (1957). BS 1955, Kan. St. Univ.; MS 1956, Okla. St. Univ.

BROCE, ALBERTO B., Assoc. Prof. of Entomology; Research Entomologist, Livestock Arthropods, Agr. Exp. Sta. (1979). BS 1965, MS 1967, PhD 1971, Univ. of Fla. (GF)

BROWDER, LEWIS E., Assoc. Prof. of Plant Pathology; Research Cereal Rust Plant Pathologist, U.S.D.A. SEA-AR (1958). AS 1952, Cameron St. Agric. Col.; BS 1954, MS 1956, Okla. St. Univ.; PhD 1965, Kan. St. Univ. (Adjunct Appointment) (GF)

BROWNBACK, SAMUEL D., Instr. of Agricultural Economics (1983). JD 1982, Univ. of Kan.

BULLARD, PENELOPE S., Instr. of Horticulture (1984). BS 1980, Univ. of Ga.

BULLER, ORLAN H., Prof. of Agricultural Economics; Research Agr. Econ. Farm Management; Production Economics, Agr. Exp. Sta. (1963). BS 1958, Kan. St. Univ.; MS 1959, PhD 1965, Mich. St. Univ. (GF)

BURCHETT, LOWELL A., Asst. Prof. of Agronomy; Crop Scientist, Kansas Crop Improvement Association, Agr. Exp. Sta. (1965). BS 1956, Okla. St. Univ.; MS 1969, Kan. St. Univ.

BURROUGHS, ROSEMARY N., Res. Asst. of Grain Science and Industry (1969). MS 1969, Kan. St. Univ.

BUSCHMAN, LAWRENT L., Asst. Prof. of Entomology; Research Entomologist, Corn Insects (P.O. Garden City) Agr. Exp. Sta. (1981). BA 1964, Tabor Col.; MS 1968, Emporia St. Univ.; PhD 1977, Univ. of Fla.

CALVIN, DENNIS D., Res. Asst. of Entomology (1981). MS 1981, Kan. St. Univ.

CAMPBELL, RONALD W., Prof. of Horticulture; Research Horticulturist, Agr. Exp. Sta. (1946). BS 1943, MS 1946, Kan. St. Univ.; PhD 1955, Mich. St. Univ. (GF)

CARINDER, WILLIAM H., Res. Asst. of Animal Sciences and Industry (1979). BS 1978, Kan. St. Univ.

CARPENTER, FRANK R., Assoc. Prof.; Assoc. Dean; Assoc. Dir. of Resident Instruction, College of Agriculture (1961). BS 1948, MS 1951, Kan. St. Univ.; PhD 1967, Univ. of Mo. (GF)

CARROW, ROBERT N., Assoc. Prof. of Horticulture; Research Horticulturist, Turfgrass, Agr. Exp. Sta. (1976). BS 1968, PhD 1972, Mich. St. Univ. (GF)

CHAUDHURI, U. N., Res. Asst. of Agronomy (1980). MS 1973, Punjab, India.

CHATTERJEE, ARUN K., Assoc. Prof. of Plant Pathology; Research Bacterial Geneticist, Agr. Exp. Sta. (1979). BS 1959, MS 1962, Bihar Ag. Col. (India); MS 1968, PhD 1971, Univ. of Guelph (Canada). (GF)

CHEN, I-TSUEN, Res. Asst. of Animal Sciences and Industry (1983). MS 1981, Va. Polytechnic Institute and St. Univ.

CHOI, YANG I., Res. Asst. of Animal Sciences and Industry (1983). MS 1981, Seoul Univ.

CHRISTENSEN, NEAL B., Res. Asst. of Agronomy (1983). MS 1983, Kan. St. Univ.

CHUNG, OKKYUNG, Assoc. Prof. of Grain Science and Industry; U.S.D.A. Grain Marketing Research Center (1976). BS 1959, EWHA Women's Univ., Korea; MS 1965, PhD 1973, Kan. St. Univ. (Adjunct Appointment) (GF)

CLAASSEN, MARK M., Asst. Prof. of Agronomy; Research Agronomist in charge, Harvey County Experimental Field (P.O. Hesston) Agr. Exp. Sta. (1977). BS 1965, Univ. of Neb.; MS 1968, PhD 1971, Iowa St. Univ.

CLAFLIN, LARRY E., Assoc. Prof. of Plant Pathology (1975). BS 1963, NW Okla. St. Univ.; MS 1969, East Texas St. Univ.; PhD 1972, Kan. St. Univ. (GF)

CLAPP, ALFRED L., Prof. of Agronomy Emeritus (1915). BS 1914, MS 1934, Kan. St. Univ.

CLAYBERG, CARL D., Prof. of Horticulture; Research Horticulturist, Vegetable Crop Geneticist, Agr. Exp. Sta. (1974). BS 1954, Univ. of Wash.; PhD 1958, Univ. of Calif. (GF)

CLAYDON, THOMAS J., Prof. of Animal Sciences and Industry Emeritus (1946). BSA 1934, Univ. of Saskatchewan (Canada); MS 1936, PhD 1939, Iowa St. Univ.

CLOTHIER, TERESA A., Res. Asst., Fort Hays Branch Station (1982). BS 1981, Ft. Hays St. Univ.

COLE, GEORGE, Asst. Prof. of Agronomy; Research Agricultural Engineer, Wind Erosion Research Unit, U.S.D.A. ARS (1981). BS 1953, Polytech Rensselaer; PhD 1973, Cornell Univ. (Adjunct Appointment)

COOPER, DENNIS B., Res. Asst. of Agronomy (1981). MS 1980, Kan. St. Univ.

COUGHLIN, COLLEEN M., Res. Asst., KABSU (1979). BS 1979, Univ. of Minn.

COX, THOMAS S., Asst. Prof. of Agronomy (1984). BSA 1976, Univ. of Ga.; MS 1979, PhD 1983, Iowa St. Univ.

COYNE, PATRICK I., Prof. of Agronomy (1983). BS 1966, Kan. St. Univ.; PhD 1969, Utah St. Univ.

CRAIG, JAMES V., Prof. of Animal Sciences and Industry; Poultry Research Geneticist, Agr. Exp. Sta. (1955). BS 1948, MS 1949, Univ. of Ill.; PhD 1952, Univ. of Wis. (GF)

CRESS, DONALD C., Prof. of Entomology (1977). PhD 1969, Okla. St. Univ.

CROFT, KAREN M., Res. Asst. of Animal Sciences and Industry (1984). BS 1983, Kan. St. Univ.

CUNNINGHAM, FRANKLIN E., Prof. of Animal Sciences and Industry; Poultry Foods Research Scientist, Agr. Exp. Sta. (1969). BS 1957, Kan. St. Univ.; MS 1959, PhD 1963, Univ. of Mo. (GF)

CURRAN, STEVEN P., Instr. of Grain Science and Industry (1978). MS 1982, Kan. St. Univ.

CURRY, JOSEPH T., Res. Asst. of Agronomy (1983). BS 1980, Unity Col.

DANLER, ROBERT J., Res. Asst. of Animal Sciences and Industry (1982). BS 1980, Kan. St. Univ.

DAVIS, ARTHUR B., Asst. Prof. of Grain Science and Industry; Research Food Scientist, Agr. Exp. Sta. (1980). BS 1969, Ore. St. Univ.; MS 1973, PhD 1976, Kan. St. Univ.

DAVIS, DUANE L., Assoc. Prof. of Animal Sciences and Industry; Swine Research Physiologist, Agr. Exp. Sta. (1977). BS 1970, MS 1974, Kan. St. Univ.; PhD 1976, Univ. of Mo. (GF)

DAWSON, ROBERT E., Instr.; Area Extension Economist, Farm Management (1976). BS 1973, MS 1974, Kan. St. Univ.

DAY, GARY E., Res. Asst. of Agronomy (1980). MS 1979, Univ. of Tenn.

DELANO, FREDERICK D., Instr.; Area Extension Economist, Farm Management (1981). MS 1972, Univ. of Mo.

DePEW, LESTER J., Asst. Prof. of Entomology; Research Entomologist, Insects of Southwestern Kansas (P.O. Garden City) Agr. Exp. Sta. (1954). BS 1949, Colo. A & M; MS 1954, Univ. of Minn.

DEYOE, CHARLES W., Prof.; Head of Dept. of Grain Science and Industry; Director of Food and Feed Grain Institute; Director, International Grains Program; Feed Technology Research Scientist, Agr. Exp. Sta. (1962). BS 1955, Kan. St. Univ.; MS 1957, PhD 1959, Tex. A & M Col. (GF)

DICK, GARY L., Res. Asst. of Entomology (1983). BS 1977, Colo. St. Univ.

DIKEMAN, MICHAEL E., Prof. of Animal Sciences and Industry; Meats Research Scientist, Agr. Exp. Sta. (1970). BS 1966, Kan. St. Univ.; MS 1968, Mich. St. Univ.; PhD 1970, Kan. St. Univ. (GF)

DODGE, GILBERT R., Asst. Prof. and Fiscal Officer, Office of Dean of Agriculture and Director, Agr. Exp. Sta. (1958). BS 1950, Kan. St. Univ.; CPA 1957, Kansas.

DRAKE, CALVIN L., Prof. of Animal Sciences and Industry; Beef Cattle Scientist, Agr. Exp. Sta. (1966). BS 1955, Kan. St. Univ.; MS 1959, Univ. of Ark.; PhD 1963, Kan. St. Univ.

DUBOIS, DONALD K., Res. Assoc., Grain Science and Industry; Amer. Inst. of Baking (1978). BS 1942, Kan. St. Univ. (Adjunct Appointment)

DUFFENS, KAY L., Res. Asst. of Plant Pathology (1982). BS 1982, Kan. St. Univ.

DUNBAR, JOHN O., Prof.; Dean of Agriculture and Director of the Agr. Exp. Sta. (1976). BS 1942, MS 1948, PhD 1954, Purdue Univ.

DURHAM, SUSAN K., Res. Asst. of Animal Sciences and Industry (1983). MS 1981, Kan. St. Univ.

EHLER, STANLEY W., Assoc. Prof. of Agronomy (1972). BS 1962, MS 1964, Univ. of So. Ill.; PhD 1974, Univ. of Mo. (GF)

ELZINGA, RICHARD J., Prof. of Entomology; Research Entomologist, Medical Insects and Mites, Agr. Exp. Sta. (1961). BS 1955, MS 1956, PhD 1960, Univ. of Utah. (GF)

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ESHBAUGH, ELBERT L., Asst. Prof. of Entomology Emeritus (1945). BS 1936, MS 1951, Kan. St. Univ.

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EVERSMEYER, MERLE G., Asst. Prof. of Plant Pathology; Research Cereal Rust Plant Pathologist, U.S.D.A., SEA-AR (1965). BS 1966, MS 1969, PhD 1971, Kan. St. Univ. (Adjunct Appointment) (GF)

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FARMER, EARL L., Prof. of Animal Sciences and Industry; Dairy Cattle Research Physiologist, Agr. Exp. Sta. (1949). BS 1948, Univ. of Mo.; MS 1957, Kan. St. Univ.; PhD 1963, Univ. of Wis. (GF)

FARRELL, EUGENE PATRICK, Prof. of Grain Science and Industry; Emeritus (1949). BS 1935, MS 1952, Kan. St. Univ. (GF)

FAUBION, JON M., Asst. Prof. of Grain Science and Industry (1983). BS 1973, PhD 1980, Kan. St. Univ.

FAY, KEVIN T., Res. Asst. of Plant Pathology (1983). BS 1975, Kan. St. Univ.

FELTNER, KURT C., Prof.; Assoc. Dean of Agriculture and Assoc. Director of Agricultural Experiment Station (1982). BS 1957, MS 1959, Univ. of Wyo; PhD 1963, Univ. of Ariz.

FERGUSON, RICHARD, Res. Asst. of Agronomy (1980). BS 1976, Friends Univ.

FICK, WALTER H., Asst. Prof. of Agronomy, Range Management Research Agronomist, Agr. Exp. Sta. (1978). BS 1973, MS 1975, Univ. of Neb.; PhD 1978, Tex. Tech. Univ. (GF)

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KENDALL, TIMMY L., Res. Asst. of Plant Pathology (1981). BS 1978, Purdue Univ.

KHALEEQ, BABRAK, Res. Assoc. of Agronomy (1980). BS 1966, Kabul Univ., Afghanistan; MS 1979, Univ. of Wy.; PhD 1980, Univ. of Neb.

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KIMMINS, R. KENT, Asst. Prof. of Horticulture, Floriculture (1978). BS 1967, MS 1970, Texas A & M Univ.; PhD 1978, N.C. St. Univ.

KING, ALICE L., Asst. Instr. of Horticulture (1984). BS 1971, Kan. St. Univ.

KIRACOFE, GUY H., Prof. of Animal Sciences and Industry; Animal Research Physiologist, Agr. Exp. Sta. (1966). BS 1958, MS 1960, Va. Polytechnic Inst.; PhD 1965, Kan. St. Univ. (GF)

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KISER, HARVEY L., Assoc. Prof. of Agricultural Economics (1979). BS 1959, MS 1963, PhD 1966, Ohio St. Univ.

KISSEL, DAVID E., Prof. of Agronomy; Soil Fertility Scientist, Agr. Exp. Sta. (1978). BS 1965, Purdue Univ.; MS 1967, PhD 1969, Univ. of Ky. (GF)

KLOPFENSTEIN, CAROL F. Asst. Prof. of Grain Science and Industry (1977). BS 1959, Penn. St. Univ.; PhD 1978, Kan. St. Univ.

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KOUDELE, JOSEPH WENDELL, Prof. of Agricultural Economics; Research Agr. Econ., Consumption Economics and Marketing, Agr. Exp. Sta. (1947). BS 1943, Univ. of Neb.; MS 1947, Univ. of Minn.; PhD 1956, Mich. St. Univ. (GF)

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MONTGOMERY, GEORGE, Prof. of Agricultural Economics Emeritus (1926). BS 1925, MS 1927, Kan. St. Univ.; PhD 1954, Univ. of Minn.

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MORGAN, MICHAEL K., Res. Asst. of Plant Pathology (1979). BS 1977, Wichita St. Univ.

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OLSON, RAYMOND V., Prof. of Agronomy (1947). AB 1939, N.D. School of Forestry; BS 1941, N.D. St. Col.; MS 1942, PhD 1947, Univ. of Wis. (GF)

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SHEPARD, JAMES F., Prof. of Plant Pathology; Research Plant Pathologist, Agr. Exp. Sta. (1976). BS 1963, Cornell Univ.; MS 1965, PhD 1967, Univ. of Calif. (GF)

SHOGREN, MERLE, Res. Assoc. Grain Science and Industry; USDA (1971). BS 1951, Bethany Col.; MS 1954, Kan. St. Univ. (Adjunct Appointment)

SHUYLER, HARLAN R., Assoc. Prof. of Grain Science and Industry (1981). PhD 1954, Purdue Univ.

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SKIDMORE, EDWARD L., Prof. of Agronomy; Research Soil Scientist, Wind Erosion Research Unit, U.S.D.A. ARS (1963). BS 1958, Utah St. Univ.; PhD 1963, Okla. St. Univ. (Adjunct Appointment) (GF)

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WRIGHT, VALERIE F., Asst. Prof. of Entomology (1979). BS 1965, Gustavus Adolphus Col.; MS 1973, PhD 1979, Univ. of Minn.

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ZIEG, ROGER G., Res. Assoc. of Plant Pathology (1982). PhD 1981, Iowa St. Univ.

Agriculture

John O. Dunbar, dean and director of the Agricultural Experiment Station

114 Waters Hall
532-7137

David J. Mugler, associate dean and director of resident instruction
Frank R. Carpenter, associate director
Lawrence H. Erpelding, associate director

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532-6151

The College of Agriculture offers one associate of agriculture degree, 15 bachelor of science degree programs, 10 master of science programs, and nine programs leading to the Ph.D. In addition there is a two-year program, a pre-veterinary medicine program, and an eight-week young farmer short course program. Some of the B.S. programs have four options: production, science, communications, and business-industry. Other curricula such as natural resource management, and food science and industry offer three options. The many programs and options provide flexibility to meet the needs of students who will be entering the broad field of professional agriculture. All programs are designed to bring about changes in students in the following areas:

Objectives

Knowledge and understanding. Help students master one or more important areas of scientific agriculture, and to gain knowledge and understanding of supporting academic areas, so that they will be able to understand and assimilate new technological developments and apply new knowledge to problem solving.

Skills. Help students develop appropriate skills and abilities to perform tasks efficiently and expertly in various areas of professional agriculture.

Professional attitudes and orientation. Help students identify with and understand the ethics and goals of professional agriculture and to continue learning throughout their lives.

Personal and leadership development. Develop in students an appreciation of present-day civilization; demonstrate that an understanding of many subject areas is required to solve problems, help students develop and understand a philosophy of life and values, and help students develop their abilities to work with others.

The profession

Professional agriculture is the application of the physical, biological, and social sciences and the principles of management to food production, food preservation and processing, crop and livestock marketing, culture of flowers and ornamentals, life processes of plants and animals, natural resources management, economic development, and related fields.

The faculty

More than 95 percent of the instructional faculty of the College of Agriculture have Ph.D. degrees. All are actively involved in research and publish their findings regularly in scientific journals. They work closely with extension specialists. Such integration of teaching, research, and extension helps ensure that courses are current and relevant.

Facilities

Effective instruction in the application of basic sciences to modern agricultural industries requires land, buildings, livestock, and equipment. More than 4,000 acres of land are used for experimental work and for instruction.

A feed mill, flour mill, and bakery include modern equipment from eight countries. Well-equipped drafting rooms are used by milling students. Greenhouses and field plots provide plants for horticulture courses.

Modern animal industry and dairy and poultry buildings contain some of the latest equipment for teaching and research in nutrition, genetics and food processing (meat, milk, eggs). Livestock of many breeds, plus various soil types, field crops, fruits, vegetables, and ornamentals are used in teaching and research.

Professional programs in agriculture

Agricultural economics—B.S., M.S., Ph.D.
Agricultural education (teaching)—B.S.
Agricultural journalism—B.S.
Agricultural mechanization—B.S.
Agronomy (crops and soils)—B.S., M.S., Ph.D.
Animal sciences and industry—B.S., M.S., Ph.D.
Bakery science and management—B.S.
Crop protection—B.S., M.S.
Entomology—M.S., Ph.D.
Feed science and management—B.S.
Food science—M.S., Ph.D.
Food science and industry—B.S.
Genetics—M.S., Ph.D.
Grain science—M.S., Ph.D.
Horticulture—B.S., M.S., Ph.D.
Horticultural therapy—B.S.
Milling science and management—B.S.
Natural resource management—B.S.
Plant pathology—M.S., Ph.D.
Pre-forestry—2 years
Pre-veterinary medicine
Retail floriculture—2 years, associate of agriculture degree

General Requirements

Selection of a major

Students usually select a curriculum or major at the time they enter the college. They are provided academic advisors in their major fields. Students enroll in general agriculture if they want to enter some part of professional agriculture but are not yet ready to identify a particular major. They are assigned an academic advisor who is a representative of the dean's office. These students are urged to choose majors before the close of the freshman year.

A student may change curriculum or major at almost any time and with relative ease, though a change after the sophomore year may delay graduation.

Some programs are closely related to agricultural resources and products. For example, agronomy is related to crops and soils; and animal sciences and industry to livestock and livestock products.

Electives permit adaptation of the program to the student's goals. The student should work with an advisor to develop an academic program most effective and valuable.

Many students work part time in the KSU laboratories, greenhouses, and on the farms. This experience adds greatly to students' learning and understanding.

Selection of an option

Most major fields of study in agriculture provide for selection of groups of courses known as options.

The science option prepares students for research and graduate study. Nearly 20 percent of recent graduates are in graduate school, aiming for M.S. or Ph.D. degrees. Graduate students will do best if their undergraduate programs were strong in the basic sciences: mathematics, botany, biology, physics, chemistry, statistics, computer science, and economics, and in communications.

The business and industries option was developed to prepare students to enter off-farm agribusiness. Many students should take courses to prepare them to compete in industry. Suggested course areas include: accounting, labor relations, corporation law, sales psychology, and journalism.

The production option is intended for students who plan to go into farming or ranching. Those who plan to enter these areas should consider their future community responsibilities and the changing characteristics of farming as they select their courses. Farmers need to understand state and local government, principles of taxation, and corporation law as applied to farms, in addition to the technology of crop and livestock production.

The communication option provides the student with some professional skills in journalism and mass communications. These courses are organized to give the student an introduction to news writing and editing. The three areas of specialization allow the student to select more advanced communications courses according to interests and needs. Such additional skills and abilities will make the student more effective in active citizenship roles and more proficient in his or her profession. Selected courses under this option include:

Required courses (15 credit hours required)

JMC 275	Reporting I	3
JMC 380	Reporting II	3
JMC 280	Editing I	3

plus six additional credit hours from one the following three groups of communications courses.

Advertising and sales communications—select 6 hours

ART 100	Design I	2
JMC 320	Principles of Advertising	3
JMC 545	Advertising Media	2
JMC 555	Advertising Copy & Layout	3
GENBA 391	Administrative Communications	3

or

Organizational communication—select 6 hours

ENGL 200	Intermediate Composition	3
SPCH 321	Public Speaking	3
SPCH 526	Persuasion	3
SPCH 527	Group Discussion Methods	3
EDCI 316	Introduction to Instructional Media	1
EDCI 760	Audio-Visual Instruction	2-3

or

Mass communications—select 6 hours

GENAG 200	Ag Student Magazine	1-3
JMC 480	Editing II	3
JMC 250	Agricultural Journalism	3
JMC 310	Photography I	1-3
JMC 535	Photojournalism	3

JMC 615	Magazine Article Writing	3
JMC 620	Magazine Production	3
JMC 625	Formation of Public Opinion	3
JMC 515	Public Relations	3
RTV 230	Radio-Television & Society	3
RTV 240	Radio-Television Audio 1	3
RTV 320	Television Video I	3
RTV 330	Reporting II (Radio-Television)	3

Electives

Suggested humanities and social science electives

(must be taken from more than one department)

College of Architecture and Design—any course in history or appreciation of architecture
Art—courses in appreciation and theory
Economics—above ECON 110 Economics 1
English—any except courses in composition
Family and child development—any course
Geography—any except GEOG 220 Environmental Geography 1 and GEOG 221 Environmental Geography II
History—any course
Modern languages—any course
Music—any course in theory or appreciation of music
Philosophy—any course
Political science—any course
Psychology—any course
Sociology, anthropology, and social work—any course
Speech—any course in theater and interpretation

Suggested additional communications courses

GENAG 410	Agricultural Student Magazine	1
ENGL 200	Intermediate Composition	3
SPCH 125	Argumentation & Debate	3
SPCH 321	Public Speaking	2
SPCH 726	Seminar in Persuasion	3
SPCH 127	Small Group Discussion Methods	3
JMC 235	Survey of the Mass Media	3
JMC 275	Reporting I	3
JMC 250	Agricultural Journalism	3
RTV 240	Radio-Television Audio 1	3
RTV 250	Television Video I	3
GENBA 391	Administrative Communications	3
GENBA 543	Sales Communications	3
EDAO 606	Principles of Teaching Adults in Extension	3

Transfer students

About 40 percent of new students entering the College of Agriculture are transfer students from a community college or an independent college.

The 63 semester hours listed under suggested basic courses below, with exceptions and variations noted, can be transferred to any of the professional programs listed below. A degree may be earned in four additional semesters by capable students with good academic records.

All curricula have opportunities for general electives. Students may take a few courses other than those listed below and apply them toward the B.S. in agriculture.

A number of community colleges in Kansas offer introductory agriculture courses approved for transfer toward a B.S. degree in agriculture.

Professional B.S. programs in agriculture

1. Agricultural economics
2. Agricultural education (teaching)
3. Agricultural journalism
4. Agricultural mechanization
5. Agronomy (crops and soils)
6. Animal sciences and industry
7. Bakery science and management
8. Crop protection
9. Feed science and management
10. Food science and industry
11. Horticulture
12. Horticultural therapy
13. Milling science and management
14. Natural resource management

Suggested basic courses, or equivalent courses

Course		Sem. hrs.
ENGL 100	English Composition I	3
	and	
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
Other communications such as journalism or a second speech course		3
(For bakery science and management, feed science and management, or milling science and management, replace with a semester of inorganic chemistry or organic chemistry, or engineering graphics.)		
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
(required only in professional programs, above numbers 4, 7, 8, 9, 10, 13, and 14)		
Calculus		5
(required only in chemistry and operations options of 7 and 13)		
Chemistry (inorganic)		8
(eight hours required in all except that only five hours are required in 1, 2, 3, 4, 6, 8, 11, and 12)		
Organic chemistry		3
(not required in 1, 3, 4, 11, 12, and option B of 14)		
ECON 110	Economics 1	3
General physics		5
(required only in 4, 7, 8, 9, 10, and 14)		
Humanities and social sciences		9
Biological science		10
(required in all except that only five hours are needed in 1, 7, 12, 13, and 14; none required in 4)		
Electives		3
		63

Program Choices

General agriculture

Students who are undecided regarding the selection of a major in agriculture may want to enroll in general agriculture. Courses taken while in this area are selected with the help of an advisor to be applicable to any major in agriculture and to most other programs offered at the University. Examples of course selections for first semester follow (semester course load):

Example I		
ENGL 100	English Composition I	3
GENAG 101	Ag Orientation	1
ASI 102	Principles of Animal Science	3
MATH 100	College Algebra	3
AGRON 200	Plant Science	4
PE 101	Concepts in Physical Education	1
		15

Example II		
AGEC 100	Principles of Agricultural Economics	3
GENAG 101	Ag Orientation	1
CHM 110	General Chemistry	5
	or	
CHM 210	Chemistry I	4
MATH 010	Intermediate Algebra	3
HORT 152	Home Horticulture	3
PE 101	Concepts in Physical Education	1
		15 or 16

Example III		
SPCH 105	Oral Communication I	2
GENAG 101	Ag Orientation	1
ECON 110	Economics I	3
AMC 151	Agricultural Mechanics Practices	2
AGRON 202	Crop Science	4
ASI 302	Introduction to Food Science	3
		15

Dual degrees

Students desiring a B.S. degree in some discipline in agriculture along with a B.S. degree in some other college at KSU will need to complete the requirements for each degree and a minimum of 150 semester hours.

Pre-veterinary medicine program

Students who satisfactorily complete the pre-veterinary medicine program and the first two years of the curriculum in veterinary medicine will be eligible for a bachelor of science degree in the College of Agriculture. Pre-veterinary medicine requirements may also be completed in the College of Arts and Sciences.

GENAG 101	Ag Orientation	1
ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry laboratory	2
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry laboratory	2
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
BIOL 198	Principles of Biology	4
BIOL 510	Embryology	3
BIOL 511	Embryology laboratory	1
BIOL 555	Microbiology laboratory	5
ASI 102	Principles of Animal Science	3
ASI 104	Poultry Science	1
ASI 103	Dairy Science	1
ASI 105	Animal Sciences & Industry	1
ASI 500	Genetics	3
ASI 200	Fundamentals of Nutrition	3
	Humanities and/or social science	12

Agriculture and business administration degree combinations

The agribusiness complex of industries (processing, preservation, distribution, and retailing of farm-produced food, and manufacture and sale of farm-used equipment, feeds and agricultural chemicals) employs a variety of professionally-trained personnel. Type of education required ranges from general business or accounting to professional and scientific agriculture to biological and physical sciences. Intensity of education needed ranges from the B.S. degree to the Ph.D. degree.

Agricultural businesses have expanded in size and number in Kansas. The College of Business Administration and College of Agriculture have identified the following programs that will prepare young people for some of the jobs in this vast complex.

Academic years listed are estimates; refer also to the catalog section on the College of Business Administration.

1. A bachelor of science degree in some discipline within the College of Agriculture followed by a master's degree in business administration; five and one-half academic years.

2. A bachelor of science degree in some discipline within the College of Agriculture, followed by a B.S. degree in business administration; five academic years.

3. A bachelor of science degree in some discipline within the College of Agriculture, including in the degree program a group of courses in business administration.

4. A bachelor of science degree in business administration, including in the degree program a group of elective courses in some discipline within agriculture.

5. A bachelor of science degree in business administration, followed by a B.S. or a master's degree in some discipline within agriculture; five or six academic years.

To take advantage of one of these programs, students would enroll in the College of Agriculture or the College of Business Administration. The B.S. program would be based on degree requirements listed in the respective college section of the catalog, and would need to be approved by the academic advisor and dean. If they pursue a second B.S. or a master's degree, the students would transfer to the second college following receipt of the first degree.

Suggested business administration and agricultural economics elective courses:

MANGT 202	Small Business Operations	3
ACCTG 221	Managerial Accounting	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MKTG 400	Marketing	3
MKTG 542	Sales Management	3
ECON 530	Money & Banking	3
ECON 620	Labor Economics	3
ECON 631	Economic Principles of Agricultural Business Firms	3
AGEC 518	Principles of Transportation	3

All other courses in agricultural economics with a 500 or higher course number.

Agriculture honors program

Agriculture students with high academic records are invited into the honors program. It encourages students to recognize and respond to the challenges of scholarly inquiry into aspects of professional and scientific agriculture as well as to investigate some of the related social, political, economic, and international issues.

The honors program is a method of intensive self-directed study. The student wishing to enter the program should have fairly definite educational goals.

Program objectives are: to increase the scope of educational attainment by providing a program in greater breadth and depth; to provide special recognition for outstanding scholastic achievement; to foster a sustained interest in advanced education and research.

Eligibility. Students in the College of Agriculture may petition to enter the honors program when they have completed 12 or more hours with a cumulative GPA of 3.4 or higher at Kansas State University.

The program provides honors students with greater curriculum flexibility, which encourages breadth and depth of study in one or more specific areas. It also exposes honors students to various areas of interest in agriculture. Each student in the program has a committee of three faculty members who assist the student in developing a program of study and in planning for independent research activities.

Eligible first-semester freshmen or transfer students enroll in GENAG 290 Honors Program Orientation, which outlines details of the honors program. This class also presents a variety of speakers and course experiences not normally available to students. After being admitted to the honors program, students may enroll in GENAG 298 Honors Colloquium in Agriculture, a course which encourages students to explore areas of mutual interest through forums and invited lecturers.

Honors students enroll in GENAG 310 Honors Seminar, which involves attending and reporting on 9 or more lectures and special convocations selected by the student from an approved list.

Juniors and seniors typically engage in independent research, many after enrolling in GENAG 380 Honors Research Planning, in which they learn methods of screening pertinent literature and tools for the preparation of research proposals. They also obtain a knowledge of research services available at KSU. When an honors student's research has been completed, it is presented orally and in written form.

Young Farmers Short Course

The course is offered the first half (eight weeks) of the spring semester. Many young farmers have not had the opportunity to attend a college or university for a regular academic program in agriculture. If today's young farmer is to remain in commercial farming, he or she will manage a business earning a gross income totaling several million dollars during the next 30 to 40 years. Only those farmers who are skillful managers will secure an adequate net income from these large businesses. To help young Kansas farmers improve their present and future farm business operations, and to teach them more about the increasingly technical aspects of farm operation, Kansas State University offers a short course program for young farmers. Enrollment is limited to the first 60 applications that are received and approved for admission each year.

University education in the operation of farm business. This program is held on campus to provide access to university facilities, including laboratories, library, and the combined resident and extension faculties. Young people who are high school graduates are invited to take advantage of this program. It is directed to those young farmers who are farming or who have a farming opportunity. If students continue studies at KSU at a later time, they will have earned eight semester hours which may be applied toward the B.S. degree. The classes will be graded and the grades will become a part of the student's permanent transcript in the KSU registrar's office.

Courses offered. Each student enrolls in the four 2-credit hour courses listed below. Upon satisfactory completion of these four courses, each student receives a certificate. The courses are selected as those most meaningful to young farmers and are taught on a practical, applied level, along with adequate principles for understanding future developments. See the College of Agriculture departments in this catalog for course descriptions.

AGEC 101	Short Course in Agricultural Economics	2
AGRON 101	Short Course in Agronomy	2
ASI 101	Short Course in Animal Sciences	2
AMC 101	Agricultural Engineering Applications	2

Secondary major in gerontology

Certain departmental courses have been approved for credit toward the secondary major in gerontology. A listing of the approved courses may be found under Academic Programs in this catalog.

Agricultural Economics

Milton L. Manuel,* head
John B. Riley,* assistant head—instruction
Donald B. Erickson,* assistant head—extension

Professors Biere,* Buller,* Erickson,* Figurski,* Hess,* Kelley,* Koudele,* Langemeier,* Manuel,* McReynolds, Norman,* Orazem,* Phillips,* Schlender, Sjo,* and Sorenson;* Associate Professors Barton, Brandsberg, Fausett, Flinchbaugh, Heid, Knight,* Pretzer,* Riley,* Schnake, and Schurle;* Assistant Professors Barnaby, Borsdorf, Burton, Gallagher, Grunewald,* Hugo, Kiser, Krause, Overley, Parker, Sands, Tierney, and Williams;* Instructors Beech, Brownback, and Tiao; Emeriti: Professors Coolidge, Pine,* McCoy,* Montgomery,* Schruben,* Thomas, and Walker.

Undergraduate study

Bachelor of Science in Agriculture—127 semester hours

Agricultural economics, as a social science, is concerned with administration and management of resources in the various phases of agriculture. Curriculum flexibility permits the student and advisor to develop a program of study meeting the interests, needs, and career objectives of each student.

The curriculum in agricultural economics offers the following options:

Agricultural business/agribusiness emphasizes agriculture, economics, and business administration as related to off-farm agribusiness management.

Agricultural business/farm management includes course work in livestock and crop production or agricultural mechanization, plus studies in agricultural economics applied to farm production management.

Agricultural programs emphasizes public administration or service in agriculture with additional courses taken in public policy.

Professional requires additional mathematics, statistics, or computer science to prepare the student for advanced degree studies in agricultural economics.

Graduate study

Master's and doctoral programs are offered in agricultural economics. Students include course work in agricultural economics, general economics, statistics, and interest areas. Interest areas may include marketing, farm management, agricultural finance, land economics, conservation, prices, production economics, taxation, agricultural policy, international development, and agricultural business and industry.

Department requirements

General requirements		**67**
ENGL 100	English Composition I	3

ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
MATH 100	College Algebra	3
MATH 205	General Calculus & Linear Algebra	3
ACCTG 211	Financial Accounting	3
CHM 110	General Chemistry	5
BIOL 198	Principles of Biology	4
PE 101	Concepts in Physical Education	1
ECON 110	Economics I	3
SOCIO 211	Introduction to Sociology	3
PSYCH 110	General Psychology	3
Political science—one of the following:		
POLSC 110	Introduction to Political Science	3
	or	
POLSC 325	United States Politics	3
CMPSC 200	Fundamentals of Computer Programming	2
Computer science lab—one of the following:		
CMPSC 201	FORTRAN Language Laboratory	2
CMPSC 202	PL/1 Language Laboratory	2
CMPSC 206	BASIC Language Laboratory	2
Agriculture—three of the following:		
ASI 102	Principles of Animal Science	3
and one of the following laboratories:		
ASI 103	Dairy Science Laboratory	1
ASI 104	Poultry Science Laboratory	1
ASI 105	Animal Science Laboratory	1
AGRON 200	Plant Science	4
	or	
AGRON 220	Crop Science	4
AGRON 305	Soils	4
ASI 302	Introduction to Food Science	3
AMC 300	Engineering in Agriculture	4
Communications—one of the following:		
ENGL 200	Intermediate Composition	3
ENGL 416	Written Communication for the Sciences	3
SPCH 321	Public Speaking	3
JMC 250	Agricultural Journalism	3
JMC 275	Reporting I	3
Any modern language if 8 or more hours are taken		8
Humanity or history—to be selected from approved departmental list		3
Public economics—two of the following:		
AGEC 510	Agricultural Policy	3
AGEC 615	International Agricultural Development	3
AGEC 631	Principles of Transportation	3
AGEC 736	Natural Resource Policy	3
ECON 510	Intermediate Macrocconomics	3
ECON 530	Money & Banking	3
ECON 532	Fiscal Operation State & Local Government	3
ECON 555	Urban & Regional Economics	3
ECON 620	Labor Economics	3
ECON 633	Public Finance	3
ECON 636	Capitalism & Socialism	3
ECON 640	Industrial Organization & Public Policy	3
ECON 681	International Trade	3
ECON 682	Economics of Underdeveloped Countries	3
ECON 686	Business Fluctuations & Forecasting	3
ECON 690	Monetary, Credit, & Fiscal Policies	3
Major requirements		**12**
AGEC 100	Principles of Agricultural Economics	3
AGEC 480	Agricultural Economics Statistics	3
AGEC 500	Production Economics	3
AGEC 505	Agricultural Market Structures	3

Option requirements		
Agricultural business—farm management		**24**
AGEC 512	Farm Management	3
AGEC 513	Farm Resource Acquisition & Finance	3
Additional agricultural economics*		9
Agriculture—any course in the College of Agriculture (except agricultural economics), agricultural enginering, or veterinary medicine numbered 200 or above, or courses not used to meet general requirement—agriculture, above. Courses to be selected from at least **two** departments.		9
Agricultural business—agribusiness		**24**
AGEC 518	Economic Principles of Agricultural Business Firms	3
Additional agricultural economics*		12
Business administration—three of the following:		
ACCTG 221	Managerial Accounting	3
FINAN 450	Business Finance	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MANGT 421	Production Management	3
MANGT 520	Organizational Behavior	3
MKTG 400	Marketing	3
MKTG 542	Sales Management	3
Agricultural programs		**18**
AGEC 510	Agricultural Policy	3
AGEC 516	Agricultural Law & Economics	3
Additional agricultural economics*		9
Political science—one of the following:		
POLSC 377	Introduction to Public Policy	3
POLSC 507	Introduction to Public Administration	3
Professional agricultural economics		**21**
Agricultural Economics*		15
Mathematics, statistics, computer science—selected with consent of advisor		6
General electives**		**24-31**

* Courses numbered 500 or above to be selected in consultation with advisor.

** Not more than nine hours may be in one area of study. Not more than 9 hours in agricultural economics courses may be used as general electives in meeting minimum 127 total hours requirement.

Courses in agricultural economics
Undergraduate credit

AGEC 100. Principles of Agricultural Economics. (3) I, II. A course suggested for all students interested in the agricultural economy. A study of economic principles, with emphasis on their application to the solution of farm, agribusiness, and agricultural industry problems in relationship to other sectors of the United States economy and foreign countries. No prerequisite. Three hours lec. a week. AGEC-100-0-0111

AGEC 101. Short Course in Agricultural Economics. (2) II. The general objective is to provide operating farmers with improved business management tools. The subject matter will be presented under the topics of Farm Business Organization; Farm Financial Management; Production Management, and Marketing Options and Decisions. Practical application of the concepts to the farm business situation of the enrollees is made. Open to enrollees in a College of Agriculture Short Course. Lecture and laboratory classes. AGEC-101-1-6-0104

AGEC 441. Agricultural Economics Seminar. (Var.) Seminars of special interest will be offered upon sufficient demand in the areas of (a) Farm Management, (b) Marketing, (c) Land Economics, (d) Policy, (e) other selected areas. Pr.: Consent of the instructor. AGEC-441-0-0111

AGEC 445. Agricultural Economics Internship. (1-3) I, II, S. Approved and supervised work study programs in various areas of agricultural economics. Project reports required. Pr.: Junior standing and prior departmental approval. AGEC-445-2-0111

AGEC 480. Agricultural Economics Statistics. (3) I, II. Principles and methods involved in the collection, analysis, interpretation, and presentation of statistical materials, with special reference to agricultural economics data. Two hours rec. and two hours lab a week. Pr.: ECON 110 and MATH 100. AGEC-480-1-7-0111

Undergraduate and graduate credit in minor field

AGEC 500. Production Economics. (3) I, II. Application of economic principles to problems of agriculture. Economic structure and aspects of American agriculture; analysis of demand, supply, production of agricultural products with particular reference to the firm. AGEC 505 is a continuation of this course and they are intended to be taken in consecutive semesters. Three hours rec. a week. Pr.: AGEC 100 or ECON 120. AGEC-500-0-0111

AGEC 505. Agricultural Market Structures. (3) I, II. Continuation of AGEC 500. Theory and application of economic principles to marketing problems in agriculture. Pricing of agricultural output and productive services under various forms of economic organization and competition; regional specialization, location, and trade; determinants of economic change; evaluation of economic and consumer welfare. Three hours rec. a week. Pr.: AGEC 500. AGEC-505-0-0111

AGEC 508. Farm and Ranch Management. (3) I. Organization and management of a farm and ranch; selection of livestock or crop system; economies of size of business; financial management of the business. Intended for non-majors. Two hours rec. and two hours lab a week. Pr.: AGEC 100. AGEC-508-1-7-0111

AGEC 510. Agricultural Policy. (3) I. Analytical treatment of recent and current economic problems and governmental policies and programs affecting American agriculture; includes price and income, rural development, and rural poverty problems. Pr.: Junior standing. AGEC-510-0-0111

AGEC 512. Farm Management. (3) II. Principles and practices of organization and management; nature and structure of business; functions and operations; management tools; decision making processes. Two hours rec. and two hours lab a week. Pr.: AGEC 500. AGEC-512-1-7-0111

AGEC 513. Farm Resource Acquisition and Finance. (3) I. Acquisition of resources needed for farms and ranches through purchasing, leasing, and other contractual arrangements; financing resource acquisition; resource market structure and pricing; financial management. Three hours rec. a week. Pr.: ECON 110. AGEC-513-0-0111

AGEC 515. Marketing of Agricultural and Food Products. (3) I. A broad view of marketing; food markets and consumption; marketing functions and institutions; prices, competition, and marketing costs; functional and organization issues; food marketing regulations; commodity marketing. Three hours rec. a week. Pr.: AGEC 100 or ECON 120. AGEC-515-0-0111

AGEC 516. Agricultural Law and Economics. (3) I, II. The legal framework for decision making by farm firms, families and individuals; liabilities, real and personal property, contracts, uniform commercial code, organization of farm firms, intergeneration property transfers, water law, fence law, federal and state regulatory power, insurance, income tax, and social security. Three hours rec. a week. Pr.: ECON 110 and junior standing. AGEC-516-0-0111

AGEC 517. Rural Banking. (3) II. Management of banks in rural areas including organization and personnel, sources and uses of funds, credit, and services, particularly to farmers and agricultural businesses; role of rural banks in the U.S. banking system. Two hours rec. and two hours lab a week, including field trips and guest bankers. Pr.: ECON 110, ACCTG 211 and junior standing. AGEC-517-1-7-0111

AGEC 518. Economic Principles of Agricultural Business Firms. (3) I, II. A study of the concept of agribusiness and its relationship to the economy as a whole. Particular attention is given to the application of economic principles in the management of marketing and farm supply firms. Three hours rec. a week. Pr.: AGEC 100 or ECON 120 and ACCTG 211 AGEC-518-0-0111

AGEC 519. Computer Applications in Agricultural Economics. (3) I, II. Application of microcomputers to problems in agricultural economics. Emphasis on budgeting, cash flow, record keeping, financial analysis, and economic information analysis. One hour rec. and four hours lab a week. Pr.: AGEC 100 or ECON 120, MATH 100, COMPSC 200 and CMPSC 201 or CMPSC 202 or CMPSC 206. AGEC-519-1-3-0111

AGEC 520. Grain Marketing. (3) I. The general areas covered include price influences and relationships, market structure, buying and selling problems, domestic and export trade; grain trade organization and regulation. Three hours rec. a week, including field trips. Pr.: ECON 110. AGEC-520-0-0111

AGEC 521. Livestock and Meat Marketing. (3) II. A study of the market structure and organization of the livestock meat economy, with emphasis on factors affecting prices, changing competitive market arrangements, and marketing problems of farmers and ranchers, market agencies, and processing firms. Three hours rec. a week. Pr.: ECON 110. AGEC-521-0-0111

AGEC 522. Commodity Futures Markets. (3) II. The evaluation, function, mechanics, analysis and application of the commodity futures markets are discussed. Topics include fundamental commodity price analysis; technical analysis; hedging and forward pricing applications; and sources, uses, and interpretation of commodity market information. Three hours rec. a week. Pr.: AGEC 100 or ECON 120. AGEC-522-0-0111

AGEC 523. Export Marketing of Agricultural and Food Products. (3) II. Applied economics of export marketing. Emphasis on the mechanics of international trade and understanding the international marketing system within which export sales of agricultural and food products take place. Three hours rec. a week. Pr.: Junior standing and AGEC 100 or ECON 120. AGEC-523-0-0111

AGEC 525. Natural Resource Economics. (3) I. Emphasis on the application of welfare economics concepts in the study of current natural resource uses, policies, and problems. Introductory course for students interested in problems of natural resource use and environmental quality. Three hours rec. a week. Pr.: ECON 110 and junior standing. AGEC-525-0-0111

AGEC 541. Agricultural Economics Seminar. (Var). Seminars of special interest will be offered upon sufficient demand in the areas of (a) Farm Management, (b) Marketing, (c) Land Economics (d) Policy, (e) other selected areas. Pr.: Consent of instructor. AGEC-541-0-0111

Undergraduate and graduate credit

AGEC 600. Bargaining and Cooperation in Agriculture. (3) I. A study of collective bargaining and cooperative activity in agriculture. Other marketing institutions such as marketing orders, marketing agreements, and agricultural marketing boards will be included. Emphasis is placed upon assessing the potential of these marketing techniques to strengthen the economic position of farmers in the economy. Three hours rec. a week. Pr.: Junior standing. AGEC-600-0-0111

AGEC 615. International Agricultural Development. (3) II. A study of principles of economic development and national and international policies that will stimulate development. Individual study is encouraged to meet student interests for understanding the problems and policies for agricultural development and the influence of such development on international policies of the United States. Three hours rec. a week. Pr.: ECON 110. AGEC-615-0-0111

AGEC 631. Principles of Transportation. (3) II, some S. The historical development and economic importance of rail, motor, air, water, and pipeline transportation in the United States—routes, services, rates, public regulation. Pr.: ECON 110. AGEC-631-0-0111

AGEC 632. Principles of Traffic Management. (3) I. Planning for efficient use of transportation facilities in the movement of raw materials and products, controlling shipments in coordination with warehouse and handling operations, and scientific selection of routes, schedules, and equipment. Pr.: ECON 110 and junior standing. AGEC-632-0-0111

AGEC 641. Agricultural Economics Seminar. (Var.). Seminars of special interest will be offered upon sufficient demand in the areas of (a) Farm Management, (b) Agricultural Finance, (c) Marketing, (d) Land Economics, (e) Policy, (f) other selected areas. Pr.: Consent of instructor. AGEC-641-0-0111

AGEC 705. Price Analysis. (3) II. The analysis of selected agricultural prices; application of regression analysis to price analysis and special econometric considerations. Two hours rec. and two hours lab a week. Pr.: AGEC 480 and 500. AGEC-705-1-7-0111

AGEC 710. Quantitative Methods in Agricultural Marketing Firms. (3) I. Application of mathematical programming and other operations research techniques to practical management problems in agriculture. Two hours rec. and two hours lab a week. Pr.: AGEC 518 or consent of instructor. AGEC-710-1-7-0111

AGEC 712. Economic Analysis of Farm Firms. (3) II. Analysis of optimum resource use in agriculture; application of linear programming and related topics for decision making. Pr.: AGEC 500. AGEC-712-0-0111

AGEC 736. Natural Resource Policy. (3) II. Economic evaluation of resource use policies and impact of those policies on economics welfare. Applications of welfare economic concepts. Externalities are emphasized. For intermediate level, upper division undergraduates with a strong economics background, beginning graduate students in economics, and other graduate students. Pr.: Six credit hours in agricultural economics and economics, and junior standing. AGEC-736-0-0111

AGEC 750. Agricultural Economics Problems. (Var.) I, II, S. Pr.: Consent of instructor. AGEC-750-3-0111

Graduate credit

AGEC 811. Seminar in Agricultural Policy. (3) S. An analysis of the relation of government to the economic aspects of farming as individual enterprise and agriculture as an industry, including the international aspects of United States agriculture. Pr.: Consent of instructor. AGEC-811-0-0111

AGEC 823. Production Economics II. (3) I. Economic theories of choice under conditions of imperfect knowledge (i.e. under risk and uncertainty) and the application of these theories to production decisions. Pr.: AGEC 500 or consent of instructor. AGEC-823-0-0111

AGEC 831. Agricultural Marketing Management and Analysis. (Var.) I, II, S. Marketing problems of firms that market or process farm products or handle farm supplies, with special emphasis on tools of analysis for solving marketing problems. Supervision of students' internship programs. Pr.: Consent of instructor. AGEC-831-0-0111

AGEC 832. Agricultural Marketing Organization and Institutions. (3) I. A study of the competitive framework, firm behavior, and economic performance in agricultural product and factor markets, including an analysis of institutional arrangements, legal restraints, and marketing control programs. Pr.: ECON 510 or consent of instructor. AGEC-832-0-0111

AGEC 898. Agricultural Economics Master's Report. (Var.) I, II, S. Master's report. AGEC-898-4-0111

AGEC 899. Agricultural Economics Master's Research. (Var.) I, II, S. Research for master's thesis. AGEC-899-4-0111

AGEC 901. Seminar in Economic Research. (3) I. The scientific reasoning underlying the selection of research problems, the formulation and testing of hypotheses, and the evaluation and presentation of results. Pr.: Consent of instructor. AGEC-901-0-0111

AGEC 922. Seminar in Agricultural Marketing. (Var.) On sufficient demand. Analysis of special problems and current developments faced by firms and agencies associated with the marketing process for agricultural products. Pr.: Consent of instructor. AGEC-922-0-0111

AGEC 940. Seminar in Agricultural Economics. (3) On sufficient demand. Problems and current developments in agricultural economics. Pr.: Consent of instructor. AGEC-940-0-0111

AGEC 999. Agricultural Economics Ph.D. Research. (Var.) I, II. S. Research for Ph.D. dissertation. AGEC-999-4-0111

Agricultural Education

Advisors—Albracht, Parmley, and Welton

Undergraduate study

Bachelor of Science in Agriculture—127 semester hours

Agricultural education is for those who are interested in educational work in agriculture.

Freshman

Fall semester	**Course**	**Sem. hrs.**
GENAG 101	Ag Orientation	1
ENGL 100	English Composition I	3
MATH 100	College Algebra	3
BIOL 198	Principles of Biology	4
	Agricultural science electives	4
PE 101	Concepts in Physical Education	1
		16
Spring semester		
ENGL 120	English Composition II	3
PSYCH 110	General Psychology	3
CHM 110	General Chemistry	5
HORT 200	Plant Science	4
	or	
AGRON 220	Crop Science	4
		15

Sophomore

Fall semester		
BIOL 201	Organismic Biology	5
AMC 151	Agricultural Mechanics Practices	2
EDAF 215	Educational Psychology I	3
ECON 110	Economics I	3
SPCH 106	Oral Communication IA	3
		16
Spring semester		
BIOCH 120	Introductory Organic & Biological Chemistry	5
AGRON 305	Soils	4
	Agricultural science electives	3
AMC 351	Farm Power	3
		15

Junior

Fall semester		
AGEC 100	Principles of Agricultural Economics	3
EDAF 315	Educational Psychology II	3
EDCI 316	Introduction to Instructional Media	1
	Literature or language electives	3
	Agricultural science electives	3
	Social science electives	3
		16
Spring semester		
EDAO 620	Principles & Philosophy of Vocational Education	3
JMC 250	Agricultural Journalism	3
EDAF 622	Psychology of Exceptional Children	3
	or	
EDAF 623	The Exceptional Child in the Regular Classroom	3
	Agricultural science electives	3
	Agricultural engineering electives	3
		15

Senior

Fall semester		
EDAO 621	Program Planning in Vocational Education	3
EDAO 500	Methods of Teaching Agriculture	2
EDAO 586	Teaching Participation in Secondary School	8
AMC 659	Agricultural Mechanics Methods	3
AMC 553	Agricultural Machinery Operation & Maintenance	3
		19
Spring semester		
	Agricultural engineering electives	2
	General electives	2
	Social science electives	3
	Agricultural science electives	8
		15

Specialty certification. Special certification is available for those who wish to prepare for positions in departments with more than one teacher. The combination of 16 required and elective credit hours in agricultural sciences from one of the following areas is required for specialty certification: animal sciences; crops and soils; horticulture; agricultural mechanics; agribusiness (credit from AGEC and GENBA).

Eight weeks during the first or second semester of the senior year are devoted to full-time student teaching. On-campus courses meet during the first eight weeks of the semester. When student teaching is taken in the spring, fall semester courses are moved to spring semester.

Because state certification requirements are currently being revised, completion of degree requirements as listed for agricultural education may not meet state certification requirements to teach vocational agriculture as specified by the Kansas Department of Education.

See the College of Education section of this catalog.

Agricultural Journalism

Advisor—Holt

Undergraduate study

Bachelor of Science in Agriculture—127 semester hours

The major in agricultural journalism prepares students for specialties in newspaper, magazine, radio-television, or agricultural information. The journalism and mass communications program is one of 83 schools and departments throughout the United States certified by the Accrediting Council on Journalism and Mass Communications.

Students majoring in this curriculum take the following courses:

General requirements

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
GENAG 101	Ag Orientation	1
MATH 100	College Algebra	3
ECON 110	Economics I	3
CHM 110	Chemistry I	4
	or	
CHM 210	General Chemistry	5
PE 101	Concepts in Physical Education	1
	Humanities and/or social sciences	12

Department course requirements

Students must complete a total of 30 credit hours in agricultural courses. Some of the courses below will count toward the 30 hours of agriculture. Area requirements are:

Agriculture core, choose any four courses from the following:

AGRON 305	Soils	4
HORT 200	Plant Science	4
	or	
AGRON 220	Crop Science	4
ASI 102	Principles of Animal Science	3
AGEC 100	Principles of Agricultural Economics	3
	Any course in agricultural engineering	
ENTOM 300	Economic Entomology	3
	or	
ENTOM 305	Livestock Entomology	2
	or	
ENTOM 325	Insects of Home, Lawn & Garden	2
PLPTH 510	Principles of Horticultural Plant Pathology	3
	or	
PLPTH 520	Principles of Field Crop Pathology	3
FOR 375	Introduction to Natural Resource Management	3
ASI 302	Introduction to Food Science	3

Biological sciences area, two courses:
Required:

BIOL 198	Principles of Biology	4
	or	
BIOL 210	General Botany	4

One of the following:

BIOL 201	Organismic Biology	5
ASI 500	Genetics	3
BIOL 220	Bacteriology and Man	3
BIOL 303	Ecology of Environmental Problems	3

Statistics and computer science area, one course from the following:

STAT 340	Biometrics I	3
CMPSC 200	Fundamentals of Computer Programming	2
	and	
CMPSC 20-	Computer Language Lab	2
AGEC 480	Agricultural Economics Statistics	3

Physical science area, one course from the following:

GEOL 100	Introductory Geology	3
GEOG 220	Environmental Geography I	4
CHM 230	Chemistry II	4
CHM 190	Elementary Organic Chemistry	3
CHM 350	General Organic Chemistry	3
CHM 531	Organic Chemistry I	3
BIOCH 120	Introductory Organic & Biological Chemistry	5
BIOCH 201	Elementary Biochemistry	3
BIOCH 521	General Biochemistry	3

Business administration and agricultural economics area:
Required:

ACCTG 211	Financial Accouning	3

One of the following:

MANGT 202	Small Business Operation	3
ACCTG 221	Managerial Accounting	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MKTG 400	Marketing	3
MKTG 542	Sales Management	3
ECON 530	Money & Banking	3
AGEC 518	Economic Principles of Agricultural Business Firms	3
ECON 631	Principles of Transportation	3

All other courses in AGEC with a 500 or higher course number

Agricultural specialization area. In consultation with the advisor, the student will decide to study one area of agriculture in depth. The student will take two courses above the introductory level (advanced courses are defined as those with a prerequisite in that agriculture department).

Agriculture electives area. Students may choose any other courses in the College of Agriculture to complete the 30 hours of agriculture.

Journalism area. Students must complete a minimum of 30 hours in journalism and mass communications courses. Maximum journalism hours allowed is 36 hours.

Journalism core, these 18 hours are required of all students.

JMC 235	Survey of Mass Media
JMC 275	Reporting I
JMC 280	Editing I
JMC 380	Reporting II (print)
JMC 665	Law of Mass Communications
RTV 230	Radio-Television & Society

Journalism electives. Remaining 12-18 hours in journalism may be chosen by the student in consultation with the faculty adviser. Note: The course JMC 250, Agricultural Journalism, is not open to majors in agricultural journalism.

Agricultural Mechanization

Advisors—Baugher, Larson, Steichen, and Stevenson

Undergraduate study

Bachelor of Science in Agriculture—127 semester hours

Agricultural mechanization courses are concerned with the application of power units, machines, buildings, equipment, and engineered production systems for agriculture and with making productive use of and conserving our soil, water, and energy resources. Courses stress learning how to acquire and use information needed for problem solving and developing independent and logical thought processes. They aim to cultivate the student's confidence in being able to apply familiar concepts from the agricultural and mechanical sciences to a broad range of agrimechanical and agribusiness problems. A background in production agriculture is useful but not essential.

Academic programs may be planned to emphasize soil and water management, irrigation, animal production facilities, or power and machinery related areas such as tillage, planting, and harvesting. Students enrolled in this major are required to select a minor area in one of the agricultural sciences. Additional electives may be used to enhance mechanical skills or to concentrate further in some area of production agriculture or business administration.

Agricultural mechanization is administered through the Department of Agricultural Engineering in the College of Engineering. Agricultural engineering faculty and courses for students in the College of Engineering are given later in this catalog.

Students specializing in other fields may elect one or more of the agricultural mechanization courses to complement their academic programs. The courses are direeted toward engineering applications, planning, servicing, and management rather than toward engineering design.

General requirements

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
GENAG 101	Ag Orientation	1
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
ECON 110	Economics I	3
CHM 110	Chemistry I	4
	or	
CHM 210	General Chemistry	5
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
PE 101	Concepts in Physical Education	1
	Communications electives	2-3
	Social sciences and humanities	12

Major courses

AMC 324	Tillage Planting Machinery	2
AMC 325	Crop Harvesting & Handling Systems	2
AMC 351	Farm Power	3
AMC 563	Farmstead Utilities	3
AMC 554	Planning & Management of Agricultural Buildings	3
AMC 558	Conservation Surveying & Planning	3

At least 9 hours of the following:

AMC 151	Agricultural Mechanics Practices	2
AMC 352	Agricultural Machinery Construction	3
AMC 552	Farm Building Construction	3
AMC 330	Agricultural Machinery Management	3
AMC 660	Farm Animal-Waste Management	3
AMC 651	Managing Farm Grain & Forage	3
AMC 653	Irrigation Practices	3

Supporting courses

ASI 102	Principles of Animal Sciences	3
AGRON 305	Soils	4
HORT 200	Plant Science	4
	or	
AGRON 220	Crop Science	4
AGEC 100	Principles of Agricultural Economics	3
	or	
ECON 120	Economics II	3
ACCTG 211	Financial Accounting	3
ME 212	Engineering Graphics I	2

Additional requirements

Production option

BIOL 198	Principles of Biology	4
	or	
BIOL 210	General Botany	4
BIOCH 120	Introductory Organic & Biological Chemistry	5

An additional course in biology, plant pathology, entomology or genetics

Students select a minor area to give a total of 12 hours in one of the following:

Agricultural economics and journalism; agronomy, entomology, horticulture, and plant pathology (courses taken to fulfill this requirement may not be used to fulfill biological science requirement); and animal sciences and industry.

Communication option

Requirements are the same as for the production option, except that communication courses as listed under communication option must be included in the minor area or as other electives.

Business and industry option

One mathematics, statistics, or computer science course;* at least two courses in business administration; and three courses in agricultural economics beyond those listed in supporting courses.* At least eight more hours selected from courses offered in the following colleges or departments: economics, agricultural economics, business administration, and industrial engineering.*

Irrigation specialization. A specialization in irrigation is available in any of the options by including the following courses in the electives selected:

AGEC 500	Production Economics	3
	or	
AGEC 512	Farm Management	3
AGRON 625	Management of Irrigated Soils	3
PLPTH 520	Principles of Field Crop Pathology	3
ENTOM 300	Economic Entomology	3
AMC 653	Irrigation Practices	3

*Selected by the student with the consent of advisor.

Graduate study

Graduate study leading to the degree master of science is offered. Prerequisite is the completion of an undergraduate curriculum substantially equivalent to requirements for one of the options shown above.

Agricultural engineering courses for students in agriculture

Undergraduate credit

AMC 101. Agricultural Engineering Applications. (2). Principles and applications of farmstead and farm facilities planning; etc. energy use and control in agricultural production; alternate energy sources; grain drying, storage, and handling; soil and water conservation and control; irrigation; selection of power units and machines based upon specific program needs. Two hours rec. and four hours lab a week for eight weeks. Open only to students in agriculture short course program. AMC-101-1-6-0998

AMC 151. Agricultural Mechanics Practices. (2) I, II. Introduction to mechanics practices and techniques basic to the repair, maintenance and construction of agricultural facilities and equipment, including oxyacetylene and arc welding, tool conditioning, soldering, power tool operation such as drill press and metal lathe. Six hours lab a week. AMC-151-1-0998

AMC 300. Engineering in Agriculture. (4) I, II. Engineering principles as applied to farm power and machinery, soil and water conservation, irrigation, farm electrification, farm structures and the farmstead. Three hours rec. and three hours lab a week. Pr.: MATH 100. AMC-300-1-0998

AMC 324. Tillage-Planting Machinery. (2) I. Primary and secondary tillage machinery, power requirements, field operation, planting equipment, herbicide placement and incorporation, fertilizer application, tillage-planting systems, and cost analysis. Two hours rec. a week. Pr.: AGRON 305 or AGRON 150. AMC-324-0-0998

AMC 325. Crop Harvesting and Handling Systems. (2) II. Hay, forage, and crop residue handling systems; machinery components, machinery operation and maintenance, system selection and cost; grain harvesting machinery, fundamentals of operation, adjustment, and maintenance. Two hours rec. a week. AMC-325-0-0998

AMC 330. Agricultural Machinery Management. (3) II. Selection, adjustment, operation, servicing, economics, and application of agricultural machines. Two hours rec. and three hours lab a week. Pr.: AMC 300 or PHYS 113. AMC-330-1-0998

AMC 351. Farm Power. (3) I, II. A study of small engines and farm tractors; ignition, injection, carburetion, fuels, lubricants, power transmission, control systems, tune-up and maintenance. Two hours rec. and three hours lab a week. Pr.: MATH 100. AMC-351-1-0998

AMC 352. Agricultural Machinery Construction. (3) I, II. Advanced shop processes and techniques for constructing and maintaining agricultural machinery; advanced welding, metallurgy and selection of materials for construction. One hour rec. and five hours lab a week. Pr.: AMC 151 and junior standing. AMC-352-1-0998

AMC 410. Farm Electrification and Soil Conservation. (3) II. For students pursuing the curriculum in Agricultural Education. Introduction to methods of planning for efficient utilization of electric energy for farm production and to farm

surveying including checking of conservation practices applied to soil and water. Two hours rec. and two hours lab a week. Pr.: MATH 100. (Student cannot apply credit for both AMC 410 and AMC 563 towards a Bachelor of Science degree.) AMC-410-1-0998

Undergraduate and graduate credit in minor field

AMC 552. Farm Building Construction. (3) I, II. Construction practices related to buildings and materials used in agriculture; application of procedures for design of concrete mixtures, framing and fastener requirements, material selection; and cost estimation. One hour rec. and five hours lab a week. Pr.: MATH 100. AMC-552-1-0998

AMC 553. Agricultural Machinery Operation and Maintenance. (3) I, II. Emphasis upon shop skills as applied to machine operation, adjustment, and maintenance principles of power transmission, draft, alignment, timing and calibration of tillage, harvesting, planting, and spraying equipment. One hour rec. and five hours lab a week. Pr.: AMC 151, AMC 352 and junior standing. AMC-553-1-0998

AMC 554. Planning and Management of Agricultural Buildings. (3) I, II. Concepts and fundamentals required in the planning of livestock production facilities including the evaluation of strength and durability of a structure, planning for an efficient functional layout, and planning for environmental modification needed in animal shelters plus site selection and farmstead planning. Three hours rec. a week. Pr.: MATH 100 and junior standing. AMC-554-0-0998

AMC 555. Dairy Mechanics. (3) On sufficient demand. Installation, adjustment, and operation of dairy plant equipment; boilers, engines, motors, pumps, refrigeration machinery, water supply, and waste disposal. Two hours rec. and three hours lab a week. Pr.: Junior standing. AMC-555-1-0998

AMC 558. Conservation Surveying and Planning. (3) II. Agricultural surveying; layout and checking waterways, terraces and farm ponds; conservation planning from aerial photographs. Two hours rec. and three hours lab a week. Pr.: MATH 100. AMC-558-1-0998

AMC 563. Farmstead Utilities. (3) I, II. Utilization of energy for light, heat, and power on the farmstead; planning for distribution of electric power and water; motors and controls. Two hours rec. and three hours lab a week. Pr.: MATH 100. AMC-563-1-0998

Undergraduate and graduate credit

AMC 615. Problems in Agricultural Mechanization. (Var.) I, II, S. Problems in the application of technical principles to agricultural mechanization. Pr.: Approval of instructor. AMC-615-3-0998

AMC 651. Managing Farm Grain and Forage. (3) I. Principles of grain and forage conditioning and storage. Structures and equipment for quality preservation. Two hours rec. and three hours lab a week. Pr.: MATH 100 and junior standing. AMC-651-1-0998

AMC 652. Soil and Water Conservation Practices. (3) II. The hydrological cycle; rainfall-runoff relationships; structural conservation practices for conserving water and controlling erosion; drainage of agricultural lands. Two hours rec. and three hours lab a week. Pr.: AGRON 305, AMC 300 or AMC 558. AMC-652-1-0998

AMC 653. Irrigation Practices. (3) I. Principles and practices of irrigation involved in the setup and operation of various irrigation systems on the farm. Two hours rec. and three hours lab a week. Pr.: AGRON 305 or AGRON 150. AMC-653-1-0998

AMC 654. Agricultural Facilities and Machinery Management. (2) II. Analytic study of functional and economic feasibility when matching farm production operations and labor-saving facilities and equipment; special emphasis on selection of equipment. Six hours lab a week. Pr.: AGEC 100 and AMC 651. AMC-654-1-0998

AMC 659. Agricultural Mechanic Methods. (3) I, II. Methods of teaching agricultural mechanics in high school including the organization and equipment for school shop; preparation of instruction sheets, organization and presentation of demonstrations. One hour rec. and six hours lab a week. Pr.: Conc. enrollment in student teaching. AMC-659-1-0998

AMC 660. Farm Animal-Waste Management. (3) I. Current practices, technology, knowledge, and problems relating to disposal or use of farm animal wastes. Attention is given to environmental, ecological, and socio-economic consequences of alternative ways in which such wastes are accumulated, handled, and cycled back into the environment. Three hours rec. a week. Pr.: CHM 110 or 210. AMC-660-0-0998

AMC 701. Advanced Farm Mechanics. (3) S. For teachers of vocational agriculture and those concerned with teaching agricultural mechanics in high school; advanced shop techniques, with special emphasis on welding, machine tool, mechanical drawing, and farm carpentry. One hour rec. and six hours lab a week. Pr.: AMC 151, AMC 659 plus one year's teaching experience or approval of instructor. AMC-701-1-0998

AMC 703. Advanced Farm Power. (3) S. For high school teachers of vocational agriculture and others concerned with teaching agricultural mechanics. Tractor operation, service, repair, and maintenance plus selection of tractors and power units. Update on small engines, depending on individual need. Develop teaching aids and instructional programs as needed. Two hours rec. and three hours lab a week. Pr.: AMC 351, AMC 659 plus one year's teaching experience. AMC-703-1-0998

Graduate credit

AMC 896. Internship. (1-4) I, II, S. Creative technical work at an appropriate educational level with agriculturally related sponsoring industries under faculty supervision. Training projects are selected by mutual agreement among the student, the sponsor, and the student's advisory committee. Pr.: AMC 330, AMC 651, or AMC 653. AMC-896-2-0998

AMC 898. Master's Report. Credit arranged. I, II, S. Topics selected with approval of major professor and department head. AMC-898-4-0998

Agronomy

(Crops, soils, range management, soil and water conservation)

G.E. Ham,* head of department

Professors Barnett,* Bohannon, Ham,* Hobbs,* Kanemasu,* Kissel,* Kilgore, Liang,* Lyles,* Nilson, Olson,* Owensby,* Paulsen,* Peterson, Pomeranz,* Posler,* Skidmore,* Smith,* Sorensen,* Stone,* Thien,* Vanderlip,* Wassom,* Whitney,* and Withee;* Associate Professors Armbrust,* Ehler,* Kirkham,* Moshier,* Ohlenbusch, Overley, Raney, Regehr,* Russ,* Swallow, and Walter; Assistant Professors Burchett, Claassen, Cole, Fick,* Fjell, Hagen,* Janssen, Lamond,* Lundquist, Maddux, Mikesell, Mueller-Warrant, Ransom, Rodgers,* Schapaugh,* Schwab,* Sears,* Shroyer, Sisson,* TenEyck; Instructor Bonczkowski; Emeriti: Professors Anderson,* Bidwell,* Bieberly, Casady,* Clapp, Dicken, Edelblute, Heyne,* Jones,* Lind, Mader,* and Woodruff;* Associate Professors Atkinson and Harper; Assistant Professor Moore; Instructor Dickerson.

Undergraduate study

Bachelor of Science in Agriculture—127 semester hours

Agronomy includes the areas of crop, soil, and range sciences. Students in agronomy have diverse interests including production and physiology, crop breeding, soil management and conservation, physical and chemical properties of soils, forages, and range management.

Students majoring in agronomy are required to complete the following basic courses, plus those in the option below that a student selects.

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
GENAG 101	Ag Orientation	1
MATH 100	College Algebra	3
ECON 110	Economics I	3
AGEC 100	Principles of Agricultural Economics	3
AGRON 220	Crop Science	4
AGRON 305	Soils	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
	Organic chemistry	3-5
PHYS 115	Descriptive Physics	4
BIOL 198	Principles of Biology	4
	or	
BIOL 210	General Botany	4
ENTOM 300	Economic Entomology	3
PLPTH 520	Principles of Field Crop Pathology	3
ACCTG 260	Financial Accounting	3
PE 101	Concepts in Physical Education	1
	Humanities and/or social sciences	9
	Communications	2-3

Additional courses required for specific options:

Production option

ASI 500	Genetics	3
BIOL 500	Plant Physiology	4
STAT 340	Biometrics I	3
	One of the following:	3-4
BIOL 529	Fundamentals of Ecology	
BIOL 220	Bacteriology & Man	
PHYS 190	Descriptive Meteorology	
GEOL 100	Introductory Geology	
CMPSC 100	Computing Appreciation	3
	or	
CMPSC 200	Fundamentals of Computer Programming	
	and	
CMPSC 20-	Language lab	4
ASI 102	Principles of Animal Science	3
	Agricultural mechanization electives	3-4
	Economics or business administration	3

Business and industry option

ASI 102	Principles of Animal Science	3
STAT 350	Business & Economics Statistics I	3
CMPSC 100	Computing Appreciation	
	or	
CMPSC 200	Fundamentals of Computer Programming	3-4
	Economics or business administration	12
	One of the following:	3-4
BIOL 529	Fundamentals of Ecology	
ASI 500	Genetics	
BIOL 220	Bacteriology & Man	
BIOL 500	Plant Physiology	

Science option

BIOL 500	Plant Physiology	4
ASI 500	Genetics	3
	or	
GEOL 100	Introductory Geology	3
CHM 271	Chemical Analysis	4
STAT 340	Biometries	3
CMPSC 100	Computing Appreciation	
	or	
CMPSC 200	Fundamentals of Computer Programming	3-4
MATH 150	Plane Trigonometry	3
MATH 220	Analytic Geometry & Calculus I	4
PHYS 114	General Physics II	8

Soil and water conservation option

MATH 150	Plane Trigonometry	3
BIOL 201	Organismic Biology	
	or	
BIOL 500	Plant Physiology	4-5
CMPSC 100	Computing Appreciation	
	or	
CMPSC 200	Fundamental Computer Programming	
	and	
CMPSC 20-	Language lab	3-4
BIOL 529	Fundamentals of Ecology	3
	Mathematics or statistics	3-4
BIOL 220	Bacteriology & Man	4
GEOL 100	Introductory Geology	
	and	
GEOL 130	Elementary Geology Laboratory	4
POLSC 111	Introduction to Political Science	3
SOCIO 211	Introduction to Sociology	3
PLAN 315	Introduction to Planning	
	or	
PLAN 715	Planning Principles	3
AGEC 525	Natural Resources Economics	3
AGRON 535	Soil Conservation	
	or	
AGRON 525	Crop and Soil Management	3
AGRON 515	Soil Genesis & Classification	3
AGRON 375	Soil Fertility	3
AGRON 746	Physical Properties of Soils	3
AGRON 501	Range Management	3
AGRON 360	Crop Growth & Development	3

Range management option

MATH 150	Plane Trigonometry	3
PHYS 115	Descriptive Physics	
	or	
PHYS 113	General Physics I	4
CMPSC 200	Fundamentals of Computer Programming	
	and	
CMPSC 20-	Language lab	4
	or	
CMPSC 100	Computing Appreciation	3
BIOL 500	Plant Physiology	4
BIOL 529	Fundamentals of Ecology	3
BIOL 551	Taxonomy of Flowering Plants	
GEOL 100	Introductory Geology	3
POLSC 111	Introduction to Political Science	3
SOCIO 211	Introduction to Sociology	3
AGRON 501	Range Management	3
ASI 102	Principles of Animal Science	3
AGRON 790	Range Management Planning	3
AGRON 681	Range Ecology	3
AGRON 660	Range Research Techniques	3
AGRON 560	Field Identification of Range & Pasture Plants	1
AGRON 670	Range Management Problems	3
AGRON 515	Soil Genesis & Classification	3
ASI 515	Beef Science	3
	Select one course from the following:	
AGRON 762	Range Grasses	2
AGRON 760	Field Course in Range Management	2
ASI 545	Range Livestock Management	2

All students majoring in agronomy must take Crop Science and Soils plus 18 additional hours in agronomy based upon the students' interest and career intentions.

Research center, laboratory, and greenhouse facilities are used by the Department of Agronomy for both research and instruction.

Graduate study

Graduate studies leading to master of science and doctor of philosophy degrees are offered in the fields of crop production, crop physiology, crop ecology, range science, plant breeding, weed science, plant genetics, soil chemistry, soil fertility, soil physics, soil management, soil-plant-water relations, erosion, irrigation, and soil classification.

A prerequisite for graduate study is the completion of an undergraduate curriculum similar to that required for undergraduate students majoring in agronomy.

Undergraduate credit

AGRON 101. Short Course in Agronomy. (2) II. Introduces the basic principles and practices concerning soil management, quality seed, crop growth and development, weed control, insects, and diseases in field crops. Time will also be devoted to topics in range management and tame forage production. AGRON-101-1-6-0102

AGRON 220. Crop Science. (4) I, II. Principles underlying practices used in the culture of corn, grain sorghum, wheat and soybeans. A basic course for majors in agronomy and others interested in crop production. Three hours lec. and two hours lab a week. Not open to students with credit in HORT 200. AGRON-220-1-7-0102

AGRON 305. Soils. (4) I, II. Fundamental chemical, physical, and biological properties of soils; their formation, fertility, and management. Three hours lec., and two hours lab a week. Pr.: CHM 110 or CHM 210. AGRON-305-1-7-0103

AGRON 330. Weed Management. (3) I, II. For those interested in the areas of crop production, crop protection, and agricultural education. Considers the origin of weeds, their relations to crops and control systems emphasizing cultural practices and herbicides. Includes weed identification. Two hours lec. and two hours lab a week. AGRON-330-1-7-0102

AGRON 340. Market Grading of Cereals. (2) I. Procedures for grading soybeans, corn, wheat, sorghum, oats, and rye. Identification and evaluation of kernel damage and other conditions determining grades of these grains. Four hours lab a week. AGRON-340-1-0-0102

AGRON 350. Crop and Seed Quality. (2) II. Identification of crops and weeds by seed and vegetative characteristics. Grain grading of soybeans, corn, wheat, and sorghum. Four hours lab a week. AGRON-350-1-0-0102

AGRON 360. Crop Growth and Development. (3) I. Comparative growth and development of warm and cool-season monocot and dicot crops. Environmental influences on growth and development processes and management techniques to minimize stresses. Three lec. a week. Pr.: AGRON 220 and 305. AGRON-360-0-0102

AGRON 375. Soil Fertility. (3) I. Study of the relationship of chemical and physical properties of soils to plant nutrition; forms of essential elements in soils and their role in plant nutrition; fertilizer materials and application. Three hours rec. a week. Pr.: AGRON 220 and 305. AGRON-375-0-0103

AGRON 385. Soil Fertility Laboratory. (2) I. Laboratory course to familiarize students with analytical processes associated with the chemical and physical procedures commonly utilized in conjunction with determination of fertility status of agricultural soils. One hour lec. and two hours lab a week. Pr.: AGRON 375 or conc. enrollment. AGRON-385-1-0-0103

AGRON 405. Internship in Agronomy. (1-2) I. Work study programs in various areas of agronomy. One hour credit for each four weeks of supervised and evaluated work experience with cooperating employers. A maximum of two hours may be applied to a B.S. in agronomy. Pr.: AGRON 220 and 305. AGRON-405-2-0102

AGRON 415. Soil Morphology. (1) I. Observation, recognition, measurement, and recording of soil morphology properties in the field. Six hours of lab a week for the first half of the semester. Pr.: AGRON 305. AGRON-415-2-0103

AGRON 420. Field Course in Weed Science. (1) II. A laboratory and field course pertaining to weed identification, sprayer calibration, herbicide action, and herbicide performance. Pr.: AGRON 330 or equiv. AGRON-420-1-0102

AGRON 430. Tropical Agronomy. (2) II. A study of the soils and plant materials of tropical areas and the production of principal crops. Systems of agriculture and problems of agricultural production in tropical regions. Pr.: AGRON 220 or HORT 200 and AGRON 305. AGRON-430-0-0103

Undergraduate and graduate credit in minor field

AGRON 501. Range Management. (3) I. Fundamental ecological principles of production, conservation, and utilization of grasslands. Application of these fundamental principles to range management. Three hours rec. a week. AGRON-501-0-0102

AGRON 515. Soil Genesis and Classification. (3) II. Factors influencing soil development and distribution. Methods of map-

ping and classifying soils for agriculture and other uses by society; field trips. Two hours rec. and three hours lab a week. Pr.: GEOL 100 and AGRON 305 or consent of instructor. AGRON-515-1-6-0103

AGRON 520. Grain Production. (3) I. An upper level course for those interested in grain production in the Central Plains region. Pest control, limiting factors, and planting factors will be considered in view of climatic conditions and crop plant growth habit. From this, a crop production strategy will be developed for each crop. Pr.: AGRON 220 and AGRON 375. AGRON-520-0-0102

AGRON 525. Crop and Soil Management. (3) II. Production management of crops and soils in semi-arid, sub-humid, and humid areas. Selection of cropping systems and appropriate practices to achieve maximum production and conservation of soil resources. Three hours rec. a week. Pr.: AGRON 220 and AGRON 305. AGRON-525-0-0103

AGRON 535. Soil Conservation. (3) I. Principles and practices of water and wind erosion control. Operation of conservation programs. Land-use planning, soil conservation legislation. Two hours rec. and one three-hour lab a week. Pr.: AGRON 305. AGRON-535-1-6-0103

AGRON 550. Forage Management and Utilization. (3) II. Production and utilization of forage crops. Development of forage programs for livestock production, including pasture and stored forages. Three hours rec. a week. Pr.: AGRON 220 and junior standing. AGRON-550-0-0102

AGRON 551. Forage Management and Utilization Laboratory. (1) II. Identification of forage species, techniques for estimating forage quality, forage physiology, and field trips. One two-hour lab a week. Pr.: Completion of or conc. enrollment in AGRON 550. AGRON-551-1-0102

AGRON 560. Field Identification of Range and Pasture Plants. (1) I. Offered 1985-86 and alternate years. This course entails identification of range pasture plants through exposure to them in their natural environment. Pr.: AGRON 220 or Botany 210 or consent of instructor. AGRON-560-1-0-0102

Undergraduate and graduate credit

AGRON 600. Crop Problems. (Var.) I, II, S. Studies may be chosen in the fields of: Genetics, Crop Improvement, Forages, Ecology, Weed Control, Plant Physiology, or Crop Production. AGRON-600-3-0102

AGRON 615. Soil Problems. (Var.) I, II, S. Studies may be chosen in the fields of: Chemistry, Physics, Conservation, Fertility, Genesis, Morphology, or Classification. AGRON-615-3-0103

AGRON 625. Management of Irrigated Soils. (3) I. Methods of irrigation, soil water retention, movement and measurement and consumptive use of water by crops. Consideration of irrigation water quality and problems of saline and sodic soils. Three hours rec. a week. Pr.: AGRON 220 and 305. AGRON-625-0-0103

AGRON 630. Principles of Crop Improvement. (3) II. Basic plant breeding techniques used to genetically improve crops for use by man and procedures to increase, distribute, and maintain breeding stocks and varieties. Two lec. and one, two-hour lab a week. Pr.: AGRON 220 and ASI 500. AGRON-630-1-7-0102

AGRON 660. Range Research Techniques. (3) II. Offered in 1984-85 and alternate years. Discussion of quantitative and qualitative procedures used to study vegetation. Includes application, advantages, and disadvantages of these methods. Use of statistical techniques for sampling, analysis, and presentation of data. Two hours rec. and one three-hour lab a week. Pr.: AGRON 501 and STAT 320. AGRON-660-1-6-0102

AGRON 670. Range Management Problems. (Var.) I, II, S. AGRON-670-3-0102

AGRON 681. Range Ecology. (3) II. Offered 1985-86 and alternate years. Application of ecological principles to range ecosystem management. Study of plant-soil-animal interactions to rangelands with discussion of plant succession, environmental influences, and ecological concepts. Two hours rec. a week and one lab credit consisting of field trips to representative range areas. Pr.: AGRON 501 and BIOL 529. AGRON-681-1-7-0102

AGRON 705. Chemical Properties of Soils. (3) I. A study of soils as a chemical and colloidal system, including their chemical and mineralogical composition and reactions occurring in them. Three hours rec. a week. Pr.: AGRON 305, GEOL 100. AGRON-705-0-0103

AGRON 715. Herbicide Interactions. (3) II. A study of systems and physiological processes in plants and soils as they affect herbicide fate and activity and are affected by herbicides. Research methodology and literature will also be discussed and evaluated. Pr.: AGRON 330 and BIOL 500 or equiv. AGRON-715-0-0102

AGRON 725. Soil and Plant Analysis. (3) I. Offered 1985-86 and alternate years. Theories and procedures for the chemical analysis of soils and plant materials. Applications of analysis in soil fertility evaluations and in research work are discussed. One hour rec. and six hours lab a week. Pr.: AGRON 305, CHM 271. AGRON-725-1-0103

AGRON 735. Chemical Fertilizers. (3) II. A study of the processes involved in the formulation of chemical fertilizers, the physical and chemical properties of various fertilizer materials and the technology of fertilizer use. Three hours rec. a week plus a field trip to inspect fertilizer manufacturing facilities. Pr.: AGRON 220, 305 and 375. AGRON-735-0-0103

AGRON 740. Plant-Water Relations. (3) II. Properties of water, terminology in plant and soil water relations, environmental aspects of plant-water relations, soil as a water reservoir, water as a plant component, water movement through the plant, special aspects of transpiration, development and significance of internal water deficits, drought resistance mechanisms, water consumption by crop plants. Pr.: AGRON 220 and 305, BIOL 500. AGRON-740-0-0102

AGRON 746. Physical Properties of Soils. (3) II. The properties of soils as affected by their physical environment, including water content, temperature, soil structure, and aeration. Two hours rec. and three hours lab a week. Pr.: AGRON 305. AGRON-746-1-6-0103

AGRON 760. Field Course in Range Management. (2) S. A summer field and lecture course dealing with the principles of range ecology as applied to range management practices; emphasis on field techniques for range plant identification and mensuration, range site evaluation, range condition classification, plant succession, and the impact of various range management practices. Two-week field course given jointly by Kansas State University and Fort Hays State University. Pr.:

AGRON 501, BIOL 529. Suitable field experience may be substituted for these prerequisites with consent of instructor. AGRON-760-2-0102

AGRON 762. Range Grasses. (2) I. Offered 1984-85 and alternate years. Field and laboratory study of range and pasture plants, with special emphasis on grasses and their distinguishing characteristics. One hour rec. and two hours lab a week. Pr.: BIOL 198. AGRON-762-3-0102

AGRON 765. Advanced Soil Fertility. (3) I. Advanced study of the forms and chemical and biological transformations of plant nutrients in soils, including the effects of microbial activities, environmental factors and cultural practices on nutrient availability. Pr.: AGRON 220, 305 and 375 or consent of instructor. AGRON-765-0-0103

AGRON 770. Plant Genetics. (3) I. Concepts and application of basic genetic principles in higher plants. Probability, linkage, chromosome aberrations, aneuploidy analysis, gene transfer in wide crosses, tissue culture and crop improvement, and genetics of disease resistance. Three hours rec. a week. Pr.: ASI 500. AGRON-770-0-0102

AGRON 780. Crop Physiology. (3) II. Offered 1984-85 and alternate years. Principles of nitrogen metabolism, mineral nutrition, photosynthesis, growth substances, and hardiness applied to crop production. Two hours rec. and two hours lab a week. Pr.: BIOL 500. AGRON-780-1-6-0102

AGRON 785. Applied Plant Breeding. (3) II. This course considers in detail the mechanics of an applied plant breeding program for agronomic crops. Pr.: AGRON 630 or HORT 740, AGRON 770, and STAT 703. AGRON-785-0-0102

AGRON 790. Range Management Planning. (3) I. Inventory and analysis of rangeland resources and development of detailed management plan. Emphasizes range management principles and practices useful in maximizing production from rangelands. Two hours rec. a week and one lab credit including field trips to ranch operations. Pr.: AGRON 501. AGRON-790-1-7-0102

Graduate credit

AGRON 805. Mechanics of Soil Erosion and Its Control. (3) I. Offered 1985-86 and alternate years. Techniques for studying erosion. Mechanics of water and wind erosion processes and control practices. Methods of predicting quantities of erosion on agriculture and nonagriculture land. Two hours rec. and three hours lab a week. Pr.: AGRON 305, PHYS 113. AGRON-805-1-6-0103

AGRON 810. Agronomy Seminar. (1) I, II. A discussion of agronomic developments. Pr.: Graduate standing. AGRON-810-0-0102

AGRON 815. Soil-Root Environment. (2) II. A study of plant roots and the soil influenced by them; with emphasis on their chemical, microbiological, and physical interactions in the rhizosphere. Pr.: AGRON 375 and BIOL 500. AGRON-815-0-0103

AGRON 830. Quantitative Genetics in Relation to Plant Breeding. (3) II. Application of statistical principles to biological populations in relation to gene and zygotic frequencies, mating systems, and effects of mutation, migration, and selection on equilibrium populations; partitioning of genetic variance, concept and methods of estimating heritability, theoretical basis of heterosis, diallel cross and combining ability, genotype by environment interaction, genetic advance under selection, models on phenotypic expression of various crops; genetics of autopolyploids. Pr.: AGRON 770, STAT 703, 704 and 705 or equiv. AGRON-830-0-0102

AGRON 850. Advanced Plant Breeding. (3) II. Offered in 1985-86 and alternate years. Single and multiple trait selection, mating designs, recurrent and single cycle selection theory, stability analyses, resource allocation theory, breeding for host plant resistance. Pr.: AGRON 785 and AGRON 830. AGRON-850-0-0102

AGRON 895. Nutrient Cycling Models. (2) II. This course examines several computer simulation models that describe individual nutrient cycling processes and a crop model incorporating several process models. The models examined will deal primarily with programming course. Pr.: AGRON 375 and 705 and one introductory computer programming course. AGRON-895-0-0102

AGRON 898. Master's Report. (2) I, II, S. Preparation of a written report either of research or of problem work on a topic in the major field. AGRON-898-4-0102

AGRON 899. Master's Research. (Var.) I, II, S. Research on a problem which may extend throughout the year and furnish data for a master's thesis. AGRON-899-4-0102

AGRON 905. Soil Physical Chemistry. (3) I. Offered 1984-85 and alternate years. Application of physical chemistry to soils; cation and anion equilibria, cation activities, electrokinetics, sorption, and other physiochemical reactions in soils. Two hours rec. and three hours lab a week. Pr.: AGRON 705, 746 and CHM 585. AGRON-905-1-6-0103

AGRON 910. Topics in Plant Breeding. (Var.) I, II, S. Discussion and lectures on important papers and contributions in this field. Pr.: Consent of instructor. (Joint listing with Dept. of Horticulture and Forestry. See HORT 910.) AGRON-910-0-0102

AGRON 916. Advanced Soil Physics. (3) I. Offered 1984-85 and alternate years. An advanced study of prominent theories concerning the physical behavior of soils. Three hours rec. a week. Pr.: AGRON 746, MATH 222, PHYS 211. AGRON-916-0-0103

AGRON 920. Agricultural Climatology. (2) II. Offered 1985-86 and alternate years. Concepts and applications of basic atmospheric principles governing the climate near the ground and the interrelationships between the physical environment and living organisms. Includes discussions on the implications of modifying the microclimate by management practices, plant-water relations, and remote sensing. Two hours rec. a week. Pr.: PHYS 193, MATH 222, AGRON 746. AGRON-920-0-0102

AGRON 925. Soil Genesis. (2) II. Offered 1984-85 and alternate years. Theories of soil formation processes. Two hours rec. a week. Pr.: AGRON 515. AGRON-925-0-0103

AGRON 930. Topics in Plant Genetics. (Var.) I, II, S. Discussion and lectures on important papers and contributions in this field. Pr.: Consent of instructor. (Joint listing with Dept. of Horticulture. See HORT 930.) AGRON-930-0-0102

AGRON 935. Topics in Soils. (Var.) I, II, S. Discussion and lectures on important papers and contributions in this field. Pr.: Consent of instructor. AGRON-935-0-0103

AGRON 950. Advanced Crop Ecology. (3) I. Offered 1984-85 and alternate years. Principles of growth and development of crops in relation to the environment. Three hours rec. a week. Pr.: BIOL 500, 529. AGRON-950-0-0102

AGRON 960. Topics in Crop Physiology and Ecology. (Var.) I, II, S. Discussion and lectures on important papers and contributions in this field. Pr.: Consent of instructor. AGRON-960-0-0102

AGRON 999. Ph.D. Research. (Var.) I, II, S. Research on a problem which may extend throughout the year and furnish data for a doctoral dissertation. AGRON-999-4-0102

Animal Sciences and Industry

Don L. Good,* head
Miles McKee, teaching coordinator

Professors Able,* Adams,* Allee,* Allen,* Bassette,* Bolsen,* Brent,* Call, Corah,* Craig,* Cunningham,* Dikeman,* Drake, Dunham, Farmer,* Francis, Good,* Harbers,* Hines,* Kiracofe,* Koch,* Kropf,* McKee, Morrill,* Norton,* Riley,* Sanford,* Schalles,* E. Smith,* Wheat,* and Zoellner; Associate Professors Davis,* Fung,* Hunt,* Kastner,* Roberts, Schafer, Simms, W. Smith,* and Spaeth; Assistant Professors Brazle, Gibbs, Harmon,* Hoover, Jeon,* Kuhl, Laudert, Michaels, Minton,* Nagaraja,* Nichols, Orwig, Pollmann,* Sigler,* and Stevenson;* Instructor Anderson; Emeriti: Professors Bonewitz, Claydon, Jackson, Martin, McAdams, McCormick, Moyer, Richardson, and Ward.

Undergraduate study

Bachelor of Science in Agriculture—127 semester hours

Courses in the department give instruction in selection, breeding, feeding, management and marketing of beef cattle, dairy cattle, horses, poultry, sheep, and swine, and the processing of products most of them produce. Options of study are available in production, business and industries, science, or communications. Within each option students may select an area of specialization in animal products, dairy production, meat animals, or poultry.

In addition to classrooms, office space, and laboratories located in Weber and Call halls, the department maintains several animal and poultry units within easy access to the campus that house the beef and dairy cattle, horses, swine, sheep, and poultry used for teaching and research.

Graduate study

Graduate study leading to the M.S. and Ph.D. degrees in animal scienees is offered in the fields of animal breeding, animal production and management, animal products, animal reproduction, animal nutrition, and genetics. Prerequisites to major graduate work in these fields are completion of a four-year curriculum substantially equivalent to that required of undergraduate students majoring in animal sciences and industry and acceptance by the department and the graduate school.

General requirements

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
GENAG 101	Ag Orientation	1
MATH 100	College Algebra	3
ECON 110	Economics I	3
CHM 210	Chemistry I	
	or	
CHM 110	General Chemistry	4-5
PE 101	Concepts in Physical Education	1
BIOL 198	Principles of Biology	4
ASI 102	Principles of Animal Science	3
ASI 200	Fundamentals of Nutrition	3
ACCTG 211	Financial Accounting	3
	Humanities and or social sciences*	9
	Communications*	2-3

* To be selected from the approved list in consultation with advisor.

Option requirements

Faculty advisors assist students in selection of nonmajor and elective courses; see chart on next page.

Specialization requirements

Meat animal specialization

Required:

ASI 105	Animal Sciences & Industry	1
ASI 250	Principles of Meat Science	2
ASI 315	Livestock & Meat Evaluation	3
ASI 320	Principles of Feeding	3
ASI 526	Principles of Animal Breeding	2
ASI 527	Beef Cattle & Sheep Breeding	1
	or	
ASI 529	Swine Breeding	1
	or	
ASI 531	Horse Breeding	1
ASI 580	Animal Sciences & Industry Seminar	1

Two of the following courses:

ASI 515	Beef Science	3
ASI 521	Horse Science	3
ASI 525	Sheep Science	2
ASI 529	Swine Science	3
ASI 621	Dairy Cattle Management	3
ASI 645	Poultry Management	3

One of the following courses in the production option:

ASI 400	Farm Animal Reproduction	4
ASI 655	Behavior of Domestic Animals	3
ASI 735	Environmental Physiology of Farm Animals	3

Dairy production specialization

Required:

ASI 103	Dairy Science	1
ASI 196	Dairy Cattle Judging	2
ASI 320	Principles of Feeding	3
ASI 400	Farm Animal Reproduction	4
ASI 526	Principles of Animal Breeding	2
ASI 528	Dairy Cattle Breeding Plans	1
ASI 581	Dairy Seminar	1
ASI 601	Milk Secretion	3
ASI 609	Dairy Cattle Nutrition	2
ASI 621	Dairy Cattle Management	3

One of the following courses:

ASI 515	Beef Science	3
ASI 521	Horse Science	3
ASI 525	Sheep Science	2
ASI 535	Swine Science	3
ASI 645	Poultry Management	3

One of the following courses:

ASI 402	Fundamentals of Milk Processing	3
ASI 502	Principles of Dairy Foods Processing	4
ASI 550	Dairy Bacteriology	4

Poultry specialization

Required:

ASI 104	Poultry Science	1
ASI 310	Poultry Judging	2
ASI 320	Principles of Feeding	3
ASI 526	Principles of Animal Breeding	2
ASI 530	Poultry Breeding	1
ASI 613	Poultry Nutrition	2
ASI 630	Egg Science	2
ASI 635	Poultry Meat Technology	2
ASI 720	Avian Metabolism	3
ASI 750	Poultry Seminar	1

Two of the following courses:

ASI 515	Beef Science	3
ASI 521	Horse Science	3
ASI 525	Sheep Science	2
ASI 535	Swine Science	3
ASI 621	Dairy Cattle Management	3
ASI 645	Poultry Management	3

Animal products specialization

Required:

ASI 311	Introductory Food Chemistry	3
ASI 550	Dairy Bacteriology	4
ASI 695	Quality Assurance of Food Products	3
BIOL 220	Bacteriology & Man	3
	or	
BIOL 555	Microbiology	5

17 hours of the following:

ASI 250	Principles of Meat Science	2
ASI 261	Meat Processing	2
ASI 270	Principles of Meat Evaluation	2
ASI 305	Fundamentals of Food Processing	3
ASI 315	Livestock & Meat Evaluation	3
ASI 405	Fundamentals of Milk Processing	3
ASI 430	Food Products Evaluation	3
ASI 502	Principles of Dairy Foods Processing	4
ASI 630	Egg Science	2
ASI 635	Poultry Meat Technology	2
ASI 694	Food Plant Management	2
ASI 725	Meat-Packing Plant Operation	2
ASI 777	Meat Technology	4

Undergraduate credit

ASI 101. Short Course in Animal Sciences. (2) II. On sufficient demand. Introduction to the basic requirements of food animal species with respect to environment, nutrition, breeding, reproduction, lactation, marketing and management for satisfactory production under contemporary agricultural conditions. Three hours lec. and three hours lab a week during an eight-week session. Limited to Short Course Program participants. ASI-101-1-6-0104

ASI 102. Principles of Animal Science. (3) I, II. Basic principles which apply to animal agriculture; survey of the industry; types, purposes, and products of livestock; principles of breeding selection, nutrition, lactation, reproduction, management and marketing. Three hours rec. a week. (ASI 103, 104, and 105 are companion courses.) ASI-102-0-0104

ASI 103. Dairy Science. (1) I, II. Application of basic principles of animal agriculture to dairying. Two hours lab a week. Pr.: ASI 102 or conc. enrollment. ASI-103-1-7-0105

ASI 104. Poultry Science. (1) I, II. Application of basic principles of animal agriculture to the poultry industry. Two hours lab a week. Pr.: ASI 102 or conc. enrollment. ASI-104-1-6-0106

Requirements	Options			
	Science	**Business and Industry**	**Production**	**Communications**
Agriculture	One course in four different areas of agriculture** (minimum 2 hours each course)+	One course in four*** different areas of agriculture** (minimum 2 hours each course)+	One course in four different areas of agriculture** (minimum 2 hours each course)+	One course in four different areas of agriculture** (minimum 2 hours each course)+
Biological sciences	Anatomy & Physiology Genetics	Anatomy & Physiology* Genetics	Anatomy & Physiology* Genetics	Anatomy & Physiology* Genetics
Business Economics (see below)		Four courses**	One course**	One course**
Mathematics (see below)	Plane Trigonometry Two other courses**	Two courses**	One course**	One course**
Physical sciences	Chemistry II General Organic Chemistry Elementary Biochemistry **or** Physics I	Introductory Organic **and** Biological Chemistry	Introductory Organic **and** Biological Chemistry One other course**	Introductory Organic **and** Biological Chemistry
				One course in four areas (minimum 2 hours)

*Either Genetics or Anatomy & Physiology required for animal products specialization
**To be selected from approved list in consultation with advisor.
***One course must be in agricultural economics
****For required courses in communications see list earlier in the College of Agriculture information.

Suggested business courses

Agricultural economics—any course numbered 500 or higher
Economics—any course numbered 500 or higher
Accounting—any course
Finance—any course
Management—any course
Marketing—any course

Suggested mathematics courses

AGEC 480 Agricultural Economics Statistics
AGEC 519 Computer Applications in Agricultural Economics
Computer science—any course (cannot use both CMPSC 100 Computing Appreciation and CMPSC 200 Fundamentals of Computer Programming)
Mathematics—MATH 125 or any higher numbered course
Statistics—any course

+
Agronomy
Agricultural economics
Agricultural engineering
Entomology
Food science
Forestry
Grain science
Horticulture
Plant pathology

ASI 105. Animal Sciences and Industry. (1) I, II. A study of the breeding and market types and classes of livestock including a comparison of the live animal and carcass evaluation. Two hours lab a week. Pr.: ASI 102 or conc. enrollment. ASI-105-1-3-0104

ASI 110. Bovine Artificial Insemination. (1) On sufficient demand. Designed to make student proficient in artificially inseminating the cow. ASI-110-1-5-0104

ASI 196. Dairy Cattle Judging. (2) II. Six hours lab a week. Pr.: ASI 102 and 103. ASI-196-1-0-0105

ASI 200. Fundamentals of Nutrition. (3) I, II, S. Elementary principles of comparative nutrition of farm animals. Three hours rec. a week. Pr.: CHM 110 or 210. ASI-200-0-0105

ASI 250. Principles of Meat Science. (2) I, II. A survey and discussion of the red meat industry and the product quality, processing, merchandising, and promotional trends and techniques. Two hours lec. a week. Pr.: BIOL 198. ASI-250-0-0104

ASI 261. Meat Processing. (2) I, II. Converting meat animals into carcasses and processing techniques for meat products. To include slaughtering, inspection, by-product handling, carcass grading, meat cutting, retail cut identification, preservation, meat cookery, meat specifications, and product control. Three hours lab and one hour rec. a week. Pr.: ASI 102, 105, and BIOL 198. ASI-261-1-3-0104

ASI 270. Principles of Meat Evaluation. (2) I. Introduction to subjective and objective standards employed in evaluating beef, lamb, and pork carcasses and also wholesale cuts. Application of these factors to carcass grade and yield of edible portion, value and consumer acceptance. Two hours rec. and lab a week. Pr.: ASI 250, 261, or conc. enrollment (or consent of instructor) and sophomore standing. ASI-270-1-6-0104

ASI 300. Principles of Livestock Feeding. (3) II. Practical application of nutritional principles to the feeding of livestock; feedstuff evaluation; nutritive requirements; basic ration formulation and evaluation. Not open to ASI majors. Student cannot apply credit for both ASI 300 and 320 toward a B.S. degree. Pr.: CHM 110 or equiv. ASI-300-0-0104

ASI 302. Introduction to Food Science. (3) I, II. Introduce and survey relationships of food raw materials and their methods of handling, manufacturing, distribution, and consumption. ASI-302-0-0101

ASI 305. Fundamentals of Food Processing. (3) II. The study of some basic ingredients used in food processing, principles of preserving and processing of foods, and food packaging. Food science and industry majors should take before the senior year. Taught in cooperation with the departments of horticulture, and grain science and industry. Pr.: A course in chemistry. ASI-305-0-0104

ASI 310. Poultry Judging. (3) I. Production characteristics of present breeds and types. Judging standard breeds and varieties by comparison; judging hens for egg and meat production; evaluation of ready-to-cook poultry; and grading of eggs. One hour rec. and six hours lab a week. Pr.: ASI 102 and 104. ASI-310-1-1-0106

ASI 311. Introductory Food Chemistry. (3) II. The basic composition, structure, and properties of foods and the chemistry of changes occurring during processing, storage, and utilization. Two hours lec. and two hours lab a week. Pr.: BIOCH 120 or 201 and 202. ASI-311-1-4-0105

ASI 315. Livestock and Meat Evaluation. (3) I, II. Evaluation of slaughter livestock and their carcasses as related to economic merit. Evaluation of breeding livestock based on visual appraisal, performance and progeny test records. Modern techniques of livestock and carcass evaluation including ultrasonic sound and tenderometer devices will be demonstrated. One hour lec. and four hours lab a week. Pr.: ASI 102 and 105 or consent of instructor. ASI-315-1-2-0104

ASI 320. Principles of Feeding. (3) I, II. Application of basic nutrition principles to the feeding of beef cattle, sheep, and swine; feedstuff evaluation; nutrient requirements; ration formulation and practical feeding problems. Two hours rec. and two hours lab a week. Pr.: ASI 200 or equiv. ASI-320-1-5-0104

ASI 325. Aptitude and Performance Appraisal of Horses. (2) II. Evaluation of athletic performance capabilities of horses including influence of heredity, conformation, training, and other environmental effects; use of records and visual appraisal for selection; industry trends in breeding and showing; oral and written defense of judgments. Two two-hour labs a week. Pr.: ASI 105. ASI-325-1-3-0104

ASI 385. Wool Grading and Classification. (1) I. A study of factors determining the commercial classes and grades of wool and the desired fleece qualities of the breeds of sheep; practice in judging, grading, and scoring wool. Three hours lab a week. Pr.: ASI 102. ASI-385-1-1-0104

ASI 395. Classification, Grading, and Selection of Meats. (2) I. Advanced study in the evaluation and classification of carcasses and wholesale cuts of beef, lamb, and pork. Application of grade standards to beef, lamb, and pork carcasses. Three hours lab a week. Pr.: ASI 250, 261. ASI-395-1-1-0104

ASI 400. Farm Animal Reproduction. (4) II. Basic reproductive anatomy and physiology of cattle, horses, pigs, poultry, and sheep during the first half of the semester provides a solid basis for reproduction management topics which occupy the second half of the course. Three hours rec. and three hours lab a week. Pr.: ASI 102. ASI-400-1-5-0104

ASI 405. Fundamentals of Milk Processing. (3) II. Offered 1985 and alternate years. A study of fundamentals of processing, quality assurance, inspection, and marketing of fluid milk and related products in a modern market milk enterprise. Two hours lec. and one three-hour lab a week. Pr.: One course in microbiology. ASI-405-1-4-0105

ASI 410. Food Analysis. (3) I. Principles, methods, and techniques necessary for quantitative, physical, and chemical analyses of food and food products. The analyses will be related to standards and regulations for food processing. Pr.: ASI 311. ASI-410-1-7-0105

ASI 420. Advanced Dairy Cattle Judging. (1) I. Three hours lab a week. Pr.: ASI 196. ASI-420-1-0-0105

ASI 422. Livestock Sales Management. (1) On sufficient demand. Hands-on experience in the planning, promotion, and production of a purebred livestock sale. Pr.: ASI major or consent of instructor and junior standing. ASI-422-1-3-0104

ASI 425. Horse Training and Management. (2) I. Inherited and learned behavior and psychological aspects of behavior modifications used in training horses. Emphasis on application of actual training techniques for training young horses and

teaching advanced maneuvers to older horses. Modern management practices which allow maximum efficiency in training. One hour lec. and three hours lab a week. Pr.: ASI 325. ASI-425-1-3-0104

ASI 430. Food Products Evaluation. (3) II. Fundamentals of sensory evaluation of dairy, egg, poultry, meat, and other agriculture food products. Study of taste, smell, texture, visual appearance, and other senses related to organoleptic examination and its application to the food processing industry. Introduction to sensory testing methods; including sampling techniques and test forms. Two hours lec. and two hours lab a week. Pr.: ASI 302 or consent of instructor. ASI-430-1-6-0105

ASI 450. Principles of Livestock Selection. (2) I. Origin, development, characteristics, and adaptation of different breeds of livestock, with special emphasis on the selection of breeding animals. Four hours lab a week. Pr.: ASI 315. ASI-450-1-3-0104

ASI 470. Form and Function in Livestock. (2) I. A detailed study of animal form and type; influence of type upon function; special training in presenting orally the relative merits of animals of all breeds. Pr.: ASI 450. ASI-470-1-0-0104

Undergraduate and graduate credit in minor field

ASI 500. Genetics. (3) I, II, S. Variation, Mendelian inheritance and related subjects. Three hours lec. a week. Pr.: BIOL 198 or 210. ASI-500-0-0104

ASI 502. Principles of Dairy Foods Processing. (4) II. Offered 1986 and alternate years. The application of chemical, microbiological, and physical principles to the conversion of milk into concentrated and dry milk products, hard and soft cheeses, frozen desserts and butter. Three hours lec. and one three-hour lab a week. Pr.: A course in microbiology and ASI 311. ASI-502-1-5-0105

ASI 512. Gestation of Farm Animals. (2) I. A detailed study of the gestation of farm animals including management and nutritional factors affecting the physiological events of gestation such as fertilization, ova transport, placenta attachment, growth and parturition of the fetus. The laboratory provides practical training in following the development of the bovine fetus. Pr.: Senior standing and consent of instructor. ASI-512-1-4-0104

ASI 515. Beef Science. (3) I, II. A comprehensive course covering all phases of the beef cattle industry. Practical application of nutrition, breeding, physiology of reproduction, carcasses, merchandising, and related areas. Special emphasis on management systems of raising, growing, and finishing beef cattle. Pr.: Senior standing. ASI-515-0-0104

ASI 521. Horse Science. (3) II. A study of the light horse industry in the U.S., structure, types and breeds of horses, selection, nutrition, management, performance, breeding, and health. Three hours lec. a week. Pr.: ASI 200. ASI-521-0-0104

ASI 524. Sheep Science. (2) I. Application of basic management principles to the sheep industry; economic aspects of commercial sheep production. Pr.: Junior standing. ASI-524-0-0104

ASI 526. Principles of Animal Breeding. (2) I, II. The genetic principles in evaluation, selection, and mating systems used in animal breeding. Intended for ASI majors. Two hours lec. a week. Pr.: ASI 500. ASI-526-0-0104

ASI 527. Beef Cattle and Sheep Breeding. (1) I, II. Evaluation, selection, and mating systems appropriate for commercial and purebred beef and sheep breeding. Two hours rec. and/or lab a week. Pr.: ASI 526. ASI-527-1-7-0104

ASI 528. Dairy Cattle Breeding Plans. (1) II. The art and science of breeding genetically superior dairy cows for objective and subjective traits through single and multiple trait selection. Three hours lab a week. Pr.: ASI 526. ASI-528-1-3-0105

ASI 529. Swine Breeding. (1) I, II. Application of genetic principles to swine improvement. Two hours rec. and/or lab a week. Pr.: ASI 526. ASI-529-1-7-0104

ASI 530. Poultry Breeding. (1) II. Theoretical and applied methods for improvement of poultry by breeding. Two hours rec. and/or lab a week. Pr.: ASI 526. ASI-530-1-7-0104

ASI 531. Horse Breeding. (1) I, II. Application of genetic principles to horse improvement. Two hours rec. and/or lab a week. Pr.: ASI 526. ASI-531-7-0104

ASI 535. Swine Science. (3) I, II. Application of basic scientific principles to the economical production of pork. Recommendations are made in breeding, reproduction, nutrition, health, housing, marketing, and general overall management of swine production units of varying sizes. Three hours rec. a week. Pr.: Senior standing. ASI-535-0-0104

ASI 545. Range Livestock Management. (2) II. A study of breeding, growing, and finishing livestock under range conditions. Two hours lec. a week. Pr.: AGRON 501. ASI-545-0-0104

ASI 550. Dairy Bacteriology. (4) I. Application of the principles of bacteriology to the production and processing of quality milk and dairy products. Consideration of the general characteristics of microorganisms in dairy products. Relationships of bacteria in milk to public health. Two hours lec. and two two-hour labs a week. Pr.: BIOCH 120 or equiv. ASI-550-1-3-0105

ASI 580. Animal Sciences and Industry Seminar. (1) I. Open only to senior students majoring in animal sciences and industry. One hour rec. a week. ASI-580-0-0104

ASI 581. Dairy Seminar. (1) II. Study of dairy periodicals, bulletins, books, other dairy literature. One hour rec. a week. Pr.: Junior standing in dairy production. ASI-581-0-0105

Undergraduate and graduate credit

ASI 601. Milk Secretion. (3) I. Anatomy and histology of mammary gland. Physiology of lactation, milk constituents and management practices that alter qualitative and quantitative aspects. Contemporary milking practices and mastitis control. Two hours lec. and two hours lab a week. Pr.: ASI 103, 200 and AP 530. ASI-601-1-7-0105

ASI 605. Commercial Cattle Feedlot Management. (Var.) I, S. Principles of commercial cattle feedlot management including cattle management, animal health, feed yard maintenance, feed mill operation, office management, and animal evaluation. A maximum of two hours credit for each four weeks of supervised work-study at an approved commercial cattle feedlot. Pr.: ASI 515. ASI-605-2-0104

ASI 606. Instrumental Analysis of Food and Agricultural Products. (2) Summer intersession. This course will present modern instrumental methods currently available for analysis of

food and agricultural products. The course will last two weeks during summer intersession. Pr.: PHYS 115 and BIOCH 201. ASI-606-1-5-0113

ASI 609. Dairy Cattle Nutrition. (2) I. Application of principles of nutrition to feeding dairy cattle; least cost formulation of balanced rations; discussion of current dairy cattle nutrition research. One hour lec. and two hours lab a week. Pr.: ASI 320. ASI-609-1-3-0104

ASI 611. Beef Cattle and Sheep Nutrition. (2) II. A detailed study of the nutrient requirements of beef cattle and sheep for various stages of growth, reproduction, and lactation. Emphasis will be given to inter-relationships between nutrition, disease, management and environment. Diets will be formulated utilizing a wide range of feed ingredients to produce optimum production at minimum cost. Current beef cattle and sheep nutrition research will also be reviewed. One hour lec. and two hours lab a week. Pr.: ASI 320. ASI-611-1-3-1004

ASI 612. Horse Nutrition. (2) I. A detailed study of the nutrient requirements of horses for various stages of growth, work, reproduction and lactation. Ration formulation using various feed ingredients. Relationships among nutrition, feed related diseases, environment and management. Review of current horse nutrition research. One hour lec. and two hours lab a week. Pr.: ASI 320. ASI-612-1-3-0104

ASI 613. Poultry Nutrition. (2) II. Gives the student knowledge of the objects and principles in feeding poultry and a working knowledge of an adequate diet for poultry, and how it is prepared and fed for most economical growth, egg production and reproduction. Pr.: BIOL 198, ASI 320. ASI-613-0-0104

ASI 614. Swine Nutrition. (2) II. A detailed study of the nutrient requirements of swine for various stages of production. Emphasis will be placed on the inter-relationships between nutrition, disease, management, and environment. Evaluation of feed ingredients, diets, premixes, and base mixes. Discussion of current research in swine nutrition. One hour lec. and two hours lab a week. Pr.: ASI 320. ASI-614-0-0104

ASI 615. Swine Production Unit Operation. (Var.) I, S. A maximum of two hours credit for each four weeks of supervised work-study at an approved commercial swine production unit. Pr.: ASI 535. ASI-615-2-0104

ASI 620. Livestock Production and Management. (2) II. Student involvement in laboratory exercises related to practical livestock production and management principles for beef, horse, sheep, or swine. Four to six hours lab a week. Pr.: Appropriate ASI course (515, 521, 525, or 535) and consent of instructor for specific area. ASI-640-2-0104

ASI 621. Dairy Cattle Management. (3) II. Integration of agronomic, biologic, and economic aspects of dairying with dairy farm layout, planning, operation, and analysis. A field study trip and a dairy farm analysis report are required. Three hours rec. a week. Pr.: ASI 102 and 103 and senior standing. ASI-621-1-8-0105

ASI 625. Beef Cow Herd Unit Operation. (Var.) I, S. Principles of management in a beef cow unit involving direct contact in physiology, reproduction, breeding programs, nutrition, ranch accounting, and other management procedures. Maximum of four total credits. Pr.: ASI 515 or consent of instructor. ASI-625-2-0104

ASI 630. Egg Science. (2) I. Offered 1984 and alternate years. Emphasis on the technical problems in processing and distribution of shell eggs and egg products, egg chemistry, microbiology, preservation, and product development. Two hours lec. a week. Pr.: ASI 102 and 104. ASI-630-0-0106

ASI 635. Poultry Meat Technology. (2) II. Offered 1985 and alternate years. Emphasis on the many technical problems that exist between producer and consumer during the processing and marketing of poultry meat and meat products. Two hours lec. a week. Pr.: ASI 102 and 104. ASI-635-0-0106

ASI 645. Poultry Management. (3) II. Offered 1985 and alternate years. A detailed study of the production and management practices involved in commercial poultry and game bird enterprises. Two hours rec. and one three-hour lab a week. Pr.: ASI 102, 104, and junior standing. ASI-645-1-3-0106

ASI 655. Behavior of Domestic Animals. (3) I. Behavior associated with domestication. Effects of selective breeding, physical and social environments, and developmental stage on social organization, aggressive behavior, sexual behavior, productivity and training of domestic animals. Physiology of behavior and abnormal behavior considered briefly. Pr.: BIOL 198. ASI-665-0-0106

ASI 661. Animal Sciences and Industry Problems. (1-3) I, II, S. Work offered in: Animal Breeding, Animal Nutrition, Beef Cattle Production, Dairy Production, Horse Production, Livestock Evaluation, Meats, Poultry, Sheep Production, Swine Production. Pr.: Consent of instructor. ASI-661-3-0104

ASI 671. Meat Selection and Utilization. (3) I. Emphasis on meat cut identification, muscle and bone anatomy, grades, fabricated meat, institutional cuts, specification writing, processing, meat preparation and shrinkage costs. Two hours lec.-rec. and two hours lab a week. Pr.: FN 300 or 501, or DRIM 440. ASI-671-1-4-0104

ASI 694. Food Plant Management. (2) I. A study of business management practices involved in a food plant operation; organization, plant operations, personnel, production control, purchasing, cost control, sales, and legal aspects of a food operation. Not open to business option students—food science and industry. Pr.: Junior standing. ASI-694-0-0105

ASI 695. Quality Assurance of Food Products. (3) I. The role of the control laboratory in maintaining standards and quality of dairy and food products and ingredients. Tests and techniques for evaluating quality and sanitation and for compliance with regulatory requirements. Two hours rec. and one three hour lab a week. Pr.: One course in bacteriology. ASI-695-1-5-0105

ASI 700. Animal Nutrition. (3) I. Intended for graduate-level course in animal nutrition. An in-depth study of digestion, absorption, and metabolism in both monogastric and ruminant species. Three hours rec. a week. Pr.: BIOCH 521 or equiv. ASI-700-0-0104

ASI 710. Physiology of Reproduction in Farm Animals. (2) I. This course offers an in-depth study of the anatomical and physiological aspects of reproduction in farm and laboratory animals including endocrine inter-relationships controlling reproductive cycles and gamete production. Literature studies and periodic laboratories deal with experimental techniques used in animal reproduction and contemporary animal production practices. One hour lec. and two hours lab a week. Pr.: ASI 400. ASI-710-1-3-0104

ASI 711. Food Fermentation. (4) II. Application of the principles of microbiology to the understanding of the fermentation of various categories of foods. Chemical, biochemical, and microbiological changes under controlled and uncontrolled conditions. Two hours lec. and six hours lab a week. Pr.: A course in biochemistry and a course in microbiology. ASI-711-1-3-0105

ASI 713. Rapid Methods and Automation in Microbiology. (2) Spring Intersession. Rapid methods and automation is a dynamic area in applied microbiology dealing with the study of improved methods in the isolation, detection, characterization, and enumeration of microorganisms and their products in clinical, food, industrial and environmental samples. The knowledge and techniques of this course are useful for students interested in the field of medical, food, industrial, and environmental microbiology for early detection of beneficial as well as harmful microorganisms in their work. ASI-713-1-4-0113

ASI 715. Chemistry of Foods. (3) I. Relationship of chemical composition to properties and to physical and chemical stability of foods. Special attention will be given to dairy and poultry products, red meats, vegetables and cereal grains. Pr.: BIOCH 521, 522. ASI-715-0-0105

ASI 720. Avian Metabolism. (3) I. Offered 1986 and alternate years. Special emphasis on the physiological processes in reproduction, digestion, absorption, circulation, respiration, excretion, and internal secretions. Three hours rec. a week. Pr.: ASI 104, 200, and BIOL 198. ASI-720-0-0106

ASI 725. Meat-Packing Plant Operation. (Var.) I, S. A minimum of two weeks intensive study, or six weeks work study in a commercial meat plant for each two credits. Exposure to procurement, selection and grading, slaughter, processing/fabrication, quality control, by-products, accounting, and mechanical/maintenance areas of a meat plant. Prior arrangements must be made. Pr.: ASI 250 and senior or graduate standing. ASI-725-2-0104

ASI 730. Techniques in Domestic Animal Behavior. (2) II. A combined seminar and laboratory type course. Current and classical studies reported and discussed, relationships between behavior and other disciplines explored and methods of data collection examined. Small-scale demonstration experiments planned, executed and reported orally and/or in scientific written style. One hour rec. and two hours lab a week. Pr.: ASI 655 and one statistics course. ASI-730-1-3-0104

ASI 735. Environmental Physiology of Farm Animals. (3) II. A detailed study of the effects of the environment on animal physiology and performance efficiency. Three hours lec. a week with frequent laboratory demonstrations. Pr.: AP 530. ASI-735-0-0104

ASI 749. Advanced Animal Breeding. (3) II. Application of genetic principles to livestock improvement, selection methods, mating systems, heritability estimates, and methods of analyzing genetic data. Three hours lec. and one hour rec. a week. Pr.: ASI 500 and three hours in statistics. ASI-749-0-0104

ASI 750. Poultry Seminar. (1) I. Required of all students majoring in poultry science. Also required of graduate students. One hour rec. or conference a week. Pr.: ASI 102 and 104. ASI-750-0-0106

ASI 777. Meat Technology. (4) II. Meat composition, meat product safety and spoilage, quality assurance, meat processing techniques, sausage and formed products, color, packaging, plant planning and organization, field trip. Three hours lec. and three hours lab a week. Pr.: ASI 250 and 261; senior or graduate standing. ASI-777-1-5-0104

Graduate credit

ASI 800. Topics in Animal Reproduction. (1) I. This is a seminar type course that involves both oral and written reporting of current literature in reproductive physiology. One hour rec. a week. Pr.: ASI 400. ASI-800-0-0104

ASI 801. Hormonal Control of Reproduction, Lactation, and Growth. (2) II. Offered in 1986 and alternate years. Basic study of endocrine glands and their hormone secretions that control reproduction, lactation, and growth in farm animals. One hour rec. and three hours lab a week. Pr.: BIOCH 521. ASI-801-1-3-0104

ASI 802.Gametes, Fertilization and Pregnancy in Farm Animals. (2) II. Offered 1985 and alternate years. A basic study of underlying mechanisms of gamete production, fertilization embryonic and fetal development and the establishment, maintenance and termination (abortion or parturition) of pregnancy. Emphasis will be on current theories and the research techniques required for testing their validity. One hour rec. and three hours lab a week. Pr.: BIOCH 521. ASI-802-1-3-0104

ASI 805. Topics in Animal Breeding. (2) I, II. On sufficient demand. Lectures and assigned reading concerned with Animal Breeding research techniques. Emphasis on discussion of advanced topics of current interest in Animal Breeding. Pr.: ASI 749. ASI-805-0-0104

ASI 818. Fundamentals of Meat Processing and Preparation. (1-2) S. Inspection, grading, processing, and preparation in relation to chemical and physical characteristics, cost, safety, quality and palatability of red meat. Pr.: FN 601 or equiv. and conc. enrollment in FN 818. ASI-818-1-7-0104

ASI 820. Rumen Metabolism. (3) I. Metabolism, absorption, digestion and passage of nutrients in the rumen; factors affecting the environment of the rumen; certain aspects of rumen function and dysfunction; techniques used in rumen research. Three one-hour rec. a week. Pr.: ASI 200; BIOCH 521 or 655. ASI-820-0-0105

ASI 825. Rumen Microbiology. (3) II. Two hours lec. and two hours lab a week dealing with the diverse kinds of microorganisms in the rumens of cattle and sheep. Classification and morphology of bacteria and protozoa; anaerobiosis, methanogenesis and microbial metabolism of carbohydrate, nitrogen and lipid; and the involvement of rumen microorganisms in major disorders of the rumen will be discussed. Pr.: BIOL 555. ASI-825-1-5-0411

ASI 830. Silage Technology. (2) I. A study of silage fermentation, nutrient conservation, aerobic deterioration processes; factors affecting silage quality; and chemical analyses used to evaluate silage. Discussion of techniques used in silage research and assigned readings within the silage literature. Two hours lec. a week. Pr.: BIOCH 521. ASI-830-0-0104

ASI 850. Analytical Techniques in Animal Sciences and Industry. (3) I, II. Principles of analytical procedures used in research in animal sciences and industries. One hour rec. and six hours lab a week. ASI-850-1-3-0104

ASI 886. Comparative Animal Nutrition. (5) I. A study of the veterinary medical aspects of nutrition, including principles of feeding and nutrition of common domestic species of food-producing and companion animals; consideration of material relative to therapeutic nutrition as related to clinical management of diseased and convalescent animals. Taught in cooperation with the departments of Anatomy and Physiology and Surgery and Medicine. Pr.: Third year standing in College of Veterinary Medicine or ASI 700. ASI-886-0-0104

ASI 890. Graduate Seminar in Animal Sciences and Industry. (1) I, II. Discussion of research and technical problems in the discipline. Attendance required of all departmental graduate students. Maximum of two hours may be applied toward an advanced degree. ASI-890-0-0104

ASI 898. Master's Report. (2) I, II, S. Pr.: Consult major professor. ASI-898-4-0104

ASI 899. Master's Research in Animal Sciences and Industry. (Var.) I, II, S. Pr.: Consult major professor. ASI-899-4-0104

ASI 900. Topics in Ruminant Nutrition. (2) II. Offered in 1986 and alternate years. Advanced consideration of theoretical and applied ruminant nutrition—classical and current development of feeding standards; energy and nutrient metabolism. Emphasis on discussion of advanced topics of current interest in ruminant nutrition. Pr.: ASI 700, 820. ASI-900-0-0104

ASI 901. Topics in Monogastric Nutrition. (2) I. Offered in 1984 and alternate years. Lectures and assigned readings concerned with determination of nutrient requirements; nutrient utilization and metabolism; nutrient interrelationships; feeding frequency; feed processing; appetite factors; methods of determining design and techniques useful in monogastric nutrition research. Pr.: ASI 700 or equiv. ASI-901-0-0104

ASI 930. Advanced Meat Science. (3) I. (Offered in fall on demand.) Basic biochemical, physiological, and histological properties of muscle and related tissues; muscle contraction, rigor mortis and muscle hydration; maturation; processing by thermal, dehydration and cold sterilization techniques; meat flavor chemistry; meat research techniques. Three hours rec. a week. Pr.: ASI 777 or equiv. and a course in biochemistry. ASI-930-0-0104

ASI 999. Doctoral Research in Animal Sciences and Industry. (Var.) I, II, S. Pr.: Consult major professor. ASI-999-4-0104

Crop Protection

Advisors: Fred W. Schwenk, chairman; Blocker, Entomology; Bockus, Plant Pathology; Campbell, Horticulture; Hetrick, Plant Pathology; Ehler, Agronomy; Geyer, Forestry; Johnson, Plant Pathology; Pedersen, Grain Science; Schwenk, Plant Pathology; Thompson, Entomology.

Undergraduate study

Bachelor of Science in Agriculture—127 semester hours

Crop protection deals with the proper use of various types of control of crop pests (insects, plant diseases, weeds, and nematodes), and is often termed pest-management or integrated control. The goal is to minimize cost and produce nutritious food and good fiber, while avoiding adverse effects on man, wildlife, and the environment.

The crop protection curriculum is administered by a committee of faculty from the departments of agronomy, entomology, horticulture, and plant pathology. Persons interested in the curriculum should contact the dean, College of Agriculture, for additional information and assignment of an advisor. It offers options as discussed below.

The pest management option is designed to prepare a student to: recognize and analyze factors that cause pest problems; prescribe an economical control that does not violate state or federal regulations and that has minimal adverse effects on the environment; advise on control programs, including ecologically sound preventive measures; and use new biological, cultural and chemical controls as they evolve.

The business and industries option permits students to take more business and economics courses and fewer biological science courses, while still providing basic core courses in entomology, plant pathology, weed science, and nematology. It is for students interested in private business, retail sales, and management.

The entomology and plant pathology science options are designed for students who wish to specialize and/or do graduate study in the various areas of those sciences.

Students majoring in crop protection are required to complete the following basic courses.

General requirements

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
GENAG 101	Ag Orientation	1
MATH 100	College Algebra	3
CHM 210	Chemistry I plus	
CHM 230	Chemistry II	8
	or	
CHM 110	General Chemistry	5
MKT 443	Sales Communication or equivalent course	2-3
ECON 110	Economics I	3
PE 101	Concepts in Physical Education	1
	Humanities and social sciences	9

Other requirements depend upon the option selected.

Pest management option

Curriculum requirements:

AGRON 240	Weed Management	3
ENTOM 300	Economic Entomology	3
ENTOM 312	General Entomology	2
ENTOM 314	Insect & Arachnid Identification	3
ENTOM 420	Insecticides: Properties & Laws	2
ENTOM 612	Insect Pest Diagnosis	2
HORT 682	Pesticide Application Technology	3
PLPTH 510	Principles of Horticultural Plant Pathology	3
	or	
PLPTH 520	Principles of Field Crop Pathology	3
PLPTH 606	Plant Disease Diagnosis	1
PLPTH 613	Plant Disease Control	3
ENTOM 651	Internship in Crop Protection	1-2
ENTOM 701	Seminar in Crop Protection	1

Supporting courses—agriculture and biological sciences:

HORT 200	Plant Science	4
	or	
AGRON 200	Crop Science	4
AGRON 305	Soils	4
AGRON 375	Soil Fertility	3

BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	4
	or	
BIOL 210	General Botany	4
BIOL 529	Fundamentals of Ecology	3
AMC 653	Irrigation Practices	3

Four or more of the following suggested:

AGRON 350	Crop & Seed Quality	2
AGRON 501	Range Management	3
AGRON 515	Soil Genesis & Classification	3
AGRON 520	Grain Production	3
AGRON 525	Crop & Soil Management	3
AGRON 550	Forage Management & Utilization	3
AGRON 610	Crop Ecology	3
AGRON 520	Weed Science	3
AGRON 625	Management of Irrigated Soils	2
HORT 400	Plant Propagation	3
HORT 520	Fruit Production	3
HORT 560	Vegetable Crop Ecology	3
HORT 575	Nursery Management	3
HORT 612	Turf Management	3

Supporting courses—physical sciences and mathematics:

PHYS 115	Descriptive Physics	4
BIOCH 120	Introductory Organic & Biological Chemistry	5
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 20-	Computer language lab	2
STAT 340	Biometrics I	3

Business and industries option

Curriculum requirements:

Curriculum requirements for the business and industries option are the same as the curriculum requirements under the pest management option.

Supporting courses—biological sciences:

HORT 200	Plant Science	4
	or	
AGRON 220	Crop Science	4
AGRON 305	Soils	4
AGRON 375	Soil Fertility	4
BIOL 198	Principles of Biology	4
BIOL 529	Fundamentals of Ecology	3

Two or more of the following:
Select from same list as from supporting courses of pest management option.

Supporting courses—physical sciences and mathematics:

STAT 340	Biometrics I	
	or	
AGEC 480	Agricultural Economics Statistics	3
PHYS 115	Descriptive Physics	4
BIOCH 120	Introduction to Organic & Biological Chemistry	5

Supporting courses—business administration and economics:

GENBA 260	Financial Accounting	3

Four or more of the following suggested:

GENBA 202	Small Business Operations	3
GENBA 270	Managerial Accounting	3
GENBA 390	Business Law I	3
GENBA 420	Management Concepts	3
GENBA 440	Marketing	3
GENBA 542	Sales Management	3
ECON 530	Money & Banking	3
ECON 620	Labor Economics	3
ECON 631	Principles of Transportation	3
AGEC 518	Economic Principles of Agricultural Business Firms	3

All other courses in AGEC with a 500 or higher course number.

Entomology

R.G. Helgesen,* head of department

Professors Blocker,* Brooks, Cress, Elzinga,* Harvey,* Hatchett,* Helgesen,* Hopkins,* Horber,* Knutson,* Mills,* Thompson,* and Wilde;* Associate Professors Broce,* Kadoum,* Lippert, McGaughey, Mock,* Poston,* Ramoska,* and Welch;* Assistant Professors Bauernfeind,* Beeman,* Bertholf, Buschman,* DePew, Higgins,* Nechols, Reese,* and Śloderbeck; Emeriti: Professors Gates and Wilbur;* Assistant Professor Eshbaugh.

Entomology is the study of insects and their near relatives. Applied entomology stresses their relations to plants and animals, including man. Courses fall into two groups: broad, general courses suitable for any student; and professional courses which provide training for research, teaching, and administration in colleges, experiment stations, health services, and agencies of the state and federal governments, industry, foundations, and private practice.

Students majoring in other fields may have a special interest in entomology. Courses 300 or 312 and 313 or 314 or 305, 325, and 327 are recommended.

Undergraduate study

Bachelor of Science in Agriculture under the crop protection curriculum, which includes the entomology science option.

Students interested in the general field of protecting plants from insects, plant diseases, and weeds should consider the pest management or business and industries option of the crop protection curriculum.

Students particularly interested in insects as a subject of special study, including insects in relation to plants, man or animals, and students anticipating graduate work, should consider the entomology science option of the crop protection curriculum.

Entomology science option of the crop protection curriculum

Students majoring in this option take, in addition to the general requirements for the curriculum, the following:

Entomology courses:

ENTOM 312	General Entomology	2
ENTOM 313	General Entomology Lab	1
ENTOM 660	External Insect Morphology	3
ENTOM 710	Insect Taxonomy	3
ENTOM 667	Insect Pest Management	2
ENTOM 680	Insect Pests of Horticultural Crops & Forests	2

Other agriculture and biology courses:

ASI 500	Genetics	3
BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
BIOL 555	Microbiology	5
BIOL 529	Fundamentals of Ecology	3
	or	
BIOL 631	Ecology	3
	Approved electives	20

Physical sciences and mathematics:

CHM 230	Chemistry II	4
MATH 150	Plane Trigonometry	3
STAT 340	Biometrics I	3

One of the following:

CHM 190	Elementary Organic Chemistry	3
	and	
CHM 191	Elementary Organic Chemistry Lab	2
	or	
CHM 531	Organic Chemistry I	3
	and	
CHM 532	Organic Chemistry Lab	2
	or	
CHM 350	General Organic Chemistry	3
	and	
CHM 351	General Organic Chemistry Lab	2

One of the following:

BIOCH 510	General Plant Biochemistry	4
	or	
BIOCH 521	General Biochemistry	3
	and	
BIOCH 522	General Biochemistry Lab	2
	or	
BIOCH 201	Elementary Biochemistry	3
	and	
BIOCH 202	Elementary Biochemistry Lab	2

One of the following:

MATH 220	Analytical Geometry & Calculus I	4
	or	
CMPSC 200	Fundamentals of Computer Programming	2
	and	
CMPSC 201	FORTRAN Language Laboratory	1

One of the following:

PHYS 113	General Physics I	4
	and	
PHYS 114	General Physics II	4
	or	
PHYS 115	Descriptive Physics	4

Graduate study

The M.S. and Ph.D. degrees are offered. For majors, professional courses in entomology and a broad, basic training in agriculture or the biological and physical sciences are needed to provide a satisfactory foundation for graduate work. Facilities for research include field insectaries, greenhouses, programmed environmental chambers, several temperature- and humidity-controlled rooms for rearing insects, laboratories for use of radioisotopes, and a scanning electron microscope.

Major laboratories are provided for study of insect behavior; host plant resistance to insects; taxonomy; toxicology; physiology; biochemistry; for biology, ecology, and control of insects attacking man, animals, and stored products; and isolated laboratories for insecticide testing and for chemical and bioassay determination of insecticide residues. Facilities for the investigation of the biology and control of insects attacking trees, shrubs, and ornamental plants, fruits and vegetables, grasslands, and field crops also are provided.

Mutual cooperation with entomologists at the U.S. Grain Marketing Research Center as well as with research faculty in selected on-campus departments further enhances graduate studies.

Undergraduate credit

ENTOM 300. Economic Entomology. (3) II. Classification, life histories, habits, and principles of control of important economic insects. For agriculture majors. Two hours lec. and two hours lab a week. ENTOM-300-1-7-0421

ENTOM 305. Livestock Entomology. (2) I. Biology and behavior of insects and other pests attacking livestock, poultry, pets, and wildlife. Current recommendations for control are discussed. For students interested in livestock production, feedlot management, dairy and poultry science, as well as general agriculture. Two hours lecture-demonstration a week. ENTOM-305-0-0421

ENTOM 306. Livestock Entomology Laboratory. (1) I. One two-hour lab a week.

ENTOM 312. General Entomology. (2) I, II. A basic study of insects and related arthropods, their structure, physiology, behavior, and relations to plants and animals, including man. Two hours rec. a week. ENTOM-312-0-0421

ENTOM 313. General Entomology Laboratory. (1) I, II. Identification, food preferences, and habitat preferences of the common insects. Two hours a week. ENTOM-313-0-0421

ENTOM 314. Insect and Arachnid Identification. (3) I. Offered 1984-85 and alternate years. Pr.: ENTOM 312 or conc. enrollment. (Not open to Entomology Science option majors in crop protection curriculum.) Identification of common insects and arachnids. Two three-hour labs a week. ENTOM-314-1-0-0421

ENTOM 325. Insects of Home, Lawn, and Garden. (2) I, II. An introduction to entomology with special reference to insects and other pests of home, lawn, and garden. Various methods of control, including non-chemical methods of keeping pest problems to a minimum. Primarily intended for students in horticulture and non-agriculture majors. Two hours lecture-demonstration a week. ENTOM-325-0-0421

ENTOM 327. Insects of Home, Lawn, and Garden Laboratory. (2) I, II. Laboratory exercises for recognition and control of many horticultural and household pests both for the homeowner and advisors of homeowners. Pr.: ENTOM 325 or conc. enrollment. Two hours lab and one hour rec. a week. ENTOM-327-1-3-0421

ENTOM 420. Insecticides: Properties and Laws. (2) II. Offered 1984-85 and alternate years. Pr.: CHM 190. Study of chemical and biological properties of insecticides. Formulations, use, safety, and environmental impact as related to agriculture. Legal aspects of pesticides will be considered, especially those pertaining to use and misuse of insecticides. Two hours lec. a week. ENTOM-420-0-0421

Undergraduate and graduate credit

ENTOM 612. Insect Pest Diagnosis. (2) II. Offered 1984-85 and alternate years. Pr.: ENTOM 314 or ENTOM 710. Diagnosis of plant damage by insects and mites, recognition of harmful insects and mites and beneficial insects. Emphasis on field crop pests but pests of other crops will be considered if there is sufficient interest. One hour lec. and two hours lab a week. ENTOM-612-6-0421

ENTOM 625. Biological Control of Insects. (3) II. Pr.: Two courses in biological science. The principles and philosophy of biological control with a major emphasis on the control of in-

sects. Two hours lec. and one hour discussion a week. ENTOM-625-0-0421

ENTOM 651. Internship in Crop Protection. (1-2) I. On-the-job training in various areas of Crop Protection. One hour credit for each four weeks of supervised work. A maximum of two credits may be applied towards a B.S. in Crop Protection. Credit is allowed only for approved work-study programs. Pr.: Junior standing in Crop Protection curriculum; or AGRON 230, ENTOM 312 and 313, PLPTH 510 or 520. ENTOM-651-0-0404

ENTOM 652. Seminar in Crop Protection. (1) II. A discussion of modern developments in the use of integrated pest management. Pr.: An introductory course each in Plant Pathology, Entomology, and Weed Science. One hour discussion a week. ENTOM-652-0-0404

ENTOM 660. External Insect Morphology. (3) I. 1983-84 and alternate years or on sufficient demand. External form, structure and anatomy; leading theories of form and structure from generalized to specialized conditions. One hour lec. and six hours lab a week. Pr.: ENTOM 300 or 312 and 313. ENTOM-660-1-3-0421

ENTOM 667. Insect Pest Management. (2) I. A presentation of the items necessary to consider in order to develop a sound pest management program, beginning with identification of a problem to recommendations made at the grower level to deal with the pest. Two hours lec. a week. Pr.: ENTOM 300 or ENTOM 312. ENTOM-667-0-0412

ENTOM 680. Insect Pests of Horticultural Crops and Forests. (2) I. Familiarization with appearance, life history, and behavior of representative insect pests of fruits, vegetables, turf, ornamental plants, shade trees, and forests. Special attention given to problems in crop protection. Two two-hour labs a week. Pr.: ENTOM 667 or conc. enrollment. ENTOM-680-1-0-0421

ENTOM 710. Insect Taxonomy. (3) II. Families in all orders and some lower categories; principles of insect collecting and collection management; introduction of principles of phylogeny and classification for students not specializing in taxonomy. One hour lec. and six hours lab a week. Pr.: ENTOM 300 or 312 and 313; ENTOM 660 recommended but not required; insect collection desirable. ENTOM-710-1-3-0421

ENTOM 745. Insect Control by Host Plant Resistance. (2) I. Offered 1984-85 and alternate years. Resistance of varieties of crop plants to insect attack and utilization in insect control; insect habits and physiology in relation to the cause of resistance and methods of breeding resistant varieties of crops. Pr.: ENTOM 300 or 312 and 313 and a course in either plant or animal genetics. ENTOM-745-0-0421

ENTOM 799. Problems in Entomology. (Var.) I, II, S. For non-thesis or non-dissertation studies. Work in various fields of entomology. Pr.: Consent of instructor. ENTOM-799-3-0421

Graduate credit

ENTOM 805. Insects of Stored Products. (3) II. Offered 1983-84 and alternate years. Biology, ecology, and behavior of stored-product insects and current practices involved in their control. Pr.: ENTOM 300, or 312 and 313, or consent of instructor. Two hours lec. and three hours lab a week. ENTOM-805-1-7-0421

ENTOM 857. Toxicology and Properties of Insecticides. (3) I. A study of the classification of insecticides, their types of formulations, biological properties, mode of action and first aid treatment. Synergism, antagonism, and other interactions. Two hours lec. and two hours lab a week. Pr.: General Organic Chemistry CHM 350 and General Biochemistry CHM 521, or consent of instructor. ENTOM-857-1-7-0421

ENTOM 865. Internal Insect Morphology. (3) II. Offered 1984-85 and alternate years. Internal anatomy of representative insects; plan and structure of internal systems. One hour lec. and six hours lab a week. Pr.: ENTOM 660. ENTOM-865-1-3-0421

ENTOM 875. Insect Physiology. (3) I. Offered 1985-86 and alternate years. Functions of insect systems for development, metamorphosis, and reproduction. Physiological and biochemical mechanisms underlying insect activities, behavior, and ecological adaptations. Two hours lec. and three hours lab a week. Pr.: ENTOM 865 or consent of instructor. ENTOM-875-1-7-0421

ENTOM 890. Ecology of Insects in Natural and Agronomic Environments. (3) I. Offered 1984-85 and alternate years. Insect populations and communities in natural ecosystems and agroecosystems, density and dispersion estimation, bioclimatic factors affecting population size and distribution, regulation and balance, population analysis and bioeconomics, concepts of population management. Two hours lec. and three hours lab a week. Pr.: STAT 704 and 705 or conc. enrollment. ENTOM-890-1-7-0421

ENTOM 891. Modeling Biological Systems. (4) II. Offered 1984-85 and alternate years. The applications of systems analysis and modeling techniques to the description and forecasting of biological processes. Three hours lec. and three hours lab a week. Pr.: STAT 703 or conc. enrollment and one course in ecology. ENTOM-891-1-6-0421

ENTOM 898. Report in Entomology. (M.S.) (Var.) I, II, S. Work in various fields of entomology. Pr.: Consent of instructor. ENTOM-898-4-0421

ENTOM 899. Research in Entomology. (M.S.) (Var.) I, II, S. For students majoring in entomology. Pr.: Knowledge in special area and consent of instructor. ENTOM-899-4-0421

ENTOM 930. Topics in Environmental and Physiological Entomology. (Var.) II. Selected topics for advanced study in insect behavior, ecology, physiology and pesticides in the environment. Pr.: Consent of instructor. ENTOM-930-3-0421

ENTOM 932. Topics in General and Systematic Entomology. (Var.) I, II. Offered 1981-82 and alternate years. Principles of taxonomy; advanced taxonomy; taxonomy of immature insects; arachnology; and biological literature. Pr.: ENTOM 710 and consent of instructor. ENTOM-932-1-5-0421

ENTOM 985. Insect Pathology. (3) I. Offered 1985-86 and alternate years. A study of infectious and non-infectious diseases of insects. Emphasis of identification and diagnosis of major insect diseases. Commercial status of various pathogens and federal regulations concerning insect pathogenic microorganisms are discussed. Pr.: BIOL 555 and ENTOM 312 and 313. Two hours lec. and two hours lab a week. ENTOM-985-1-7-0421

ENTOM 995. Entomology Seminar. (1) I, II, S. Pr.: Consult seminar committee. Pass-fail grade only. ENTOM-995-0-0421

ENTOM 999. Research in Entomology. (Var.) I, II, S. Dissertation credit for students majoring in entomology. Pr.: Knowledge in special area and consent of instructor. ENTOM-999-4-0421

Food Science and Industry

Advisors: Bassette, Cunningham, Fung, Hunt, Jeon, Kastner, Kropf, and Roberts, Animal Sciences and Industry; Hoseney and Seib, Grain Science and Industry; Greig, Horticulture.

Undergraduate study

Bachelor of Science in Food Science and Industry—127 semester hours

This curriculum deals with the theoretical and practical aspects of the food industry from production of the raw material through acceptance of the finished product.

The curriculum, designed to educate individuals in the discipline of food science, balances fundamental principles and application of food theory within a flexible program that permits students to tailor education to fit personal career goals. The program is certified by the National Institute of Food Technologists.

Employment opportunities include production management, product and process research and development, public health and regulatory agency service, teaching, merchandising, advertising, technical service and marketing, quality control supervision, and positions in international food agencies.

Students will select one of three options: processing, business, or science.

The processing option emphasizes processing techniques through such courses as baking science, poultry products technology, food engineering, handling and processing fruits and vegetables, meat technology, dairy food processing, processing grains for food, and meat packing plant operations.

In preparing students to manage food industries, the business option emphasizes accounting, business law, marketing, business finance, management, personnel, labor legislation, consumer behavior, and sales. It also incorporates a few processing courses.

The science option prepares students for specializing in research, product development, and quality control. It often leads to graduate work in food science. Courses are selected to give students excellent backgrounds in mathematics, chemistry, microbiology, statistics, and computer science, along with understanding of processing and food characteristics.

Graduate study

All options may lead to graduate study in food science. Both M.S. and Ph.D. programs are offered.

This is an interdepartmental curriculum involving the Colleges of Agriculture and Home Economics. The science option involves the Colleges of Home Economics and Agriculture. Students may enroll in either college for the science option of this curriculum, depending upon their interest.

Facilities range from those required for fundamental studies to pilot plant production and utilization of dairy, poultry, red meat, horticultural, and grain-based foods. Students should contact the office of the Dean of Agriculture or the Dean of Home Economics for assignment of an advisor.

Scholarships are available through the National Institute of Food Technologists to qualified incoming freshman planning to major in Food Science and Industry. High school seniors interested in applying for a scholarship should contact the Dean of Agriculture or the Dean of Home Economics by December of their senior year.

Core curriculum—science, processing, and business options

Liberal-general (13-14 hours)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
ECON 110	Economics I	3
PE 101	Concepts in Physical Education	1
GENAG 101	Ag Orientation	1

Social sciences/humanities (9 hours)

Mathematics (9 hours)

MATH 100	College Algebra	3
STAT 340	Biometrics I	3
MATH 205	General Calculus & Linear Algebra	3
	or	
MATH 210	Technical Calculus I	3

Biological sciences (7-9 hours)

BIOL 198	Principles of Biology	4
BIOL 220	Bacteriology & Man	3
	or	
BIOL 555	Microbiology*	5

Physical sciences (20-30 hours)

CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 190	Elementary Organic Chemistry	3
	or	
CHM 350	General Organic Chemistry*	3
CHM 351	General Organic Chemistry Laboratory	2
BIOCH 201	Elementary Biochemistry**	3
BIOCH 202	Elementary Biochemistry Laboratory	2
	or	
BIOCH 521	General Biochemistry*	3
BIOCH 522	General Biochemistry Laboratory	2
CHM 271	Chemical Analysis*	4
PHYS 115	Descriptive Physics	4
	or	
PHYS 113	General Physics I*	4
PHYS 114	General Physics II	4

*Required for science option.
**If BIOCH 202 is not available, substitute BIOCH 522.

Professional courses (27-28 hours)

ASI 302	Introduction to Food Science	3
ASI 410	Food Analysis	3
ASI 311	Introductory Food Chemistry	3
ET 440	Introduction to Food Engineering Technology	4
BIOL 520	Microbiology of Foods	4
ASI 695	Quality Assurance	3
	or	
GRSC 651	Food & Feed Plant Sanitation	4
FN 502	Principles of Nutrition	3
GENAG 500	Food Science Seminar	1
ASI 305	Fundamentals of Food Processing (course also numbered GRSC 305)	3

Options (select one):
Science: two processing courses plus a minimum of thirteen hours selected from **any** of the courses listed below.

Processing: a minimum of eighteen hours from the list of processing electives, including courses from at least three commodity areas, plus six hours from business or professional electives listed below.

Business: a minimum of eighteen hours from the list of suggested business electives, including ACCTG 211 and ACCTG 221, plus two of the processing electives, plus three hours from the processing or professional electives listed below.

Professional electives:

ASI 630	Egg Science	2
ASI 635	Poultry Meat Technology	2
ASI 694	Food Plant Management	2
HORT 792	Handling & Processing Fruits & Vegetables	3
GRSC 120	Introduction to Bakery Technology	2
GRSC 602	Cereal Science	3
GRSC 661	Qualities of Feed & Food Ingredients	3
CMPSC 100	Computing Appreciation	3
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 20-	Computer language lab	2
FN 301	Trends in Food Products	3
FN 501	Food Science	4
FN 612	Principles of Food Product Development & Control	3
FN 750	Nutrition Aspects of Food Processing & Preparation	3
FN 790	Food Research Techniques	3
GENAG 630	Food Science Problem	variable

Processing electives:

ASI 250	Principles of Meat Science	2
ASI 261	Meat Processing	2
ASI 405	Fundamentals of Milk Processing	3
ASI 430	Food Products Evaluation	3
ASI 502	Principles of Dairy Food Processing	4
ASI 550	Dairy Bacteriology	4
ASI 671	Meat Selection & Utilization	3
ASI 711	Food Fermentation	4
ASI 725	Meat Packing Plant Operations	2-6
ASI 777	Meat Technology	4
GRSC 100	Principles of Milling	3
GRSC 625	Flour & Dough Testing	3
GRSC 635	Baking Science I	2
GRSC 636	Baking Science I Laboratory	2
GRSC 737	Baking Science II	2
GRSC 738	Baking Science II Laboratory	1
ET 640	Food Processing Operations	5
FN 620	Sensory Evaluation of Foods	3

Business electives:

AGEC 511	Consumption Economics in Agriculture	3
AGEC 515	Marketing of Agricultural & Food Products	3
AGEC 518	Economic Principles of Agricultural Business Firms	3
AGEC 520	Grain Marketing	3
AGEC 521	Livestock & Meat Marketing	3
ASI 694	Food Plant Management	2
ECON 120	Economics II	3
ACCTG 211	Financial Accounting	3
ACCTG 221	Managerial Accounting	3
FINAN 450	Business Finance	3
MANGT 202	Small Business Operations	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MANGT 421	Production Management	3
MANGT 530	Labor Legislation	3
MANGT 531	Personnel & Wage Administration	3
MKTG 400	Marketing	3
MKTG 450	Consumer Behavior	3
MKTG 541	Retailing	3
MKTG 542	Sales Management	3
MKTG 640	Marketing Research	3
MKTG 641	Business Logistics	3

Unrestricted electives (7-18 hours)

Forestry

A Jay Schultz, head of department

Professors Biswell, Geyer,* Grey, Naughton, Nighswonger, and Strickler; Associate Professors Aslin, Atchison, Bratton, Gould, Loucks, Mahaffey,* Moyer, Pinkerton, and Rowland; Assistant Professors Lynch, Blair, and Bruckerhoff; Instructors Kunkel and Strine.

Undergraduate study

The Department of Forestry offers a two-year program in pre-forestry and the option, park resource management, in the natural resource management curriculum.

Hours earned in the pre-forestry program can be transferred to most other colleges offering a degree in forestry. The department does not offer graduate degrees.

Pre-forestry (2-year program)

Freshman

Fall semester

BIOL 210	General Botany	4
ENGL 100	English Composition I	3
SPCH 106	Oral Communication IA	3
MATH 100	College Algebra*	3
FOR 285	Introduction to Forestry	3
	Electives	1-2
		17-18

Spring semester

CHM 110	General Chemistry	5
	or	
CHM 210	Chemistry I	4
ENGL 120	English Composition II	3
MATH 150	Plane Trigonometry*	3
GEOL 100	Geology I	3
FOR 210	Forestry Graphics	2
PE 101	Concepts in Physical Education	1
		16-17

*Students with proper mathematics background are encouraged to substitute calculus for these courses.

Sophomore

Fall semester

BIOL 305	Soils	4
FOR 330	Dendrology I	2
FOR 310	Forestry Instruments	2
STAT 340	Biometrics I	3
FOR 321	Forestry Resource Topics	1
ECON 110	Economics I	3
MATH 205	General Calculus & Linear Algebra	3
		18

Spring semester

PHYS 115	Descriptive Physics	4
ECON 120	Economics II	3
FOR 340	Dendrology II	2
CE 212	Elementary Surveying Engineering	3
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 206	BASIC Language Laboratory	2
		16

Park resource management

Bachelor of Science in Agriculture—127 semester hours

Freshman

Fall semester

GENAG 101	Ag Orientation	1
CHM 110	General Chemistry	5
ENGL 100	English Composition I	3
FOR 375	Introduction of Natural Resource Management	3
PE 101	Concepts in Physical Education	3
		16

Spring semester

ENGL 120	English Composition II	3
MATH 150	Plane Trigonometry	3
SPCH 106	Oral Communication IA	3
BIOL 210	General Botany	3
	Electives	3
		15

Sophomore

Fall semester

FOR 285	Introduction to Foresty	3
ECON 110	Economics I	3
FOR 330	Dendrology I	2
	or	
HORT 374	Woody Plants	3
GEOL 100	Introduction to Geology	3
SOCIO 211	Introduction to Sociology	3
	Electives	3
		17-18

Spring semester

AGRON 305	Soils	4
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 206	Language Laboratory	2
FOR 340	Dendrology II	2
	or	
HORT 375	Woody Plants	3
FOR 440	Use of Natural Resources for Leisure	3
BIOL 529	Fundamentals of Ecology	3
		16-17

Junior

Fall semester

PHYS 115	Descriptive Physics	4
POLSC 110	Introduction to Political Science	3
	or	
POLSC 520	State and Local Government	3
STAT 330	Elementary Statistics	3
	or	
STAT 340	Biometrics	3
AGEC 625	Natural Resource Economics	3
	Electives	3
		16

Spring semester

BIOL 433	Wildlife Conservation	3
ENTOM 312	General Entomology	2
ENTOM 313	General Entomology Laboratory	1
FOR 590	Park Operations	4
HORT 200	Plant Sciences	4

Senior

Fall semester

FOR 645	Park Management Seminar	1
FOR 350	Park Field Studies	2
FOR 699	Park Administration Management	3
HORT 612	Turf Management	3
HORT 620	Arboriculture	3
	Electives	3
		15

Spring semester

FOR 635	Methods of Environmental Interpretation	3
	Electives	9-11
		12-14

At least six hours must be in humanities or social sciences
12-15 free electives

Select four courses from:

FOR 550	Urban Forestry	3
FOR 575	Management of Water Resources for Leisure	3
FOR 600	Travel, Tourism & Park Management	3
AGRON 501	Range Management	3
GEOG 205	Remote Sensing of the Environment	2
PLPTH 510	Plant Pathology	3
JMC 630	Public Relations	3

Undergraduate credit

FOR 210. Forestry Graphics. (2) II. Construction and interpretation of maps, charts, and graphs employed in forestry and related resources. One hour rec. and three hours lab a week. No prerequisites. FOR-210-1-0114

FOR 275. Farm Forestry. (3) II. Care and management of existing farm woodlots for maximum production of fuelwood and saw timber, livestock and homestead protection, and recreational opportunities. Establishment and care of new forest plantings for timber production, nut production, wildlife habitat improvement, wind protection and snow management. Land-use decisions related to Kansas conditions will also be covered. FOR-275-1-5-0114

FOR 285. Introduction to Forestry. (3) I. An introduction to American Forestry. Forestry heritage in the U.S., importance of forests, multiple use concepts, management practices, utilization, protection, policy, and the profession of forestry. FOR-285-0-0114

FOR 311. Forestry Instruments. (2) I. Introduction to the use of instruments and applied measurements used in forestry and related resources. One hour lec. and three hours lab a week. No prerequisites. FOR-311-1-0114

FOR 321. Forestry Resource Topics. (1) I. Student presentation of ideas, practices, and concepts in forestry or related areas. One hour rec. a week. FOR-321-0-0114

FOR 330. Dendrology I. (2) I. Identification, classification, silvical characteristics, distribution, and economic significance of important North American angiosperm trees. One hour rec. and three hours lab a week. Pr.: BIOL 210 or equiv. FOR-330-1-0114

FOR 340. Dendrology II. (2) II. Identification, classification, silvical characteristics, distribution, and economic significance of important North American gymnosperm trees. One hour rec. and three hours lab a week. Pr.: BIOL 210 or equiv. FOR-340-1-0114

FOR 350. Park and Recreation Areas Field Studies. (2) I, II, S. Required professional employment: a survey and application of the principles of park and recreation areas management and operations. Studies of selected aspects of natural resource management for recreation. Preparation and presentation of a comprehensive analysis of a specific assigned problem. Pr.: Sophomore in Park and Rec. Mgmt. FOR-350-3-0115

FOR 375. Introduction to Natural Resource Management. (3) I. A survey of historic and present day uses, problems and basic management approaches associated with our renewable and non-renewable natural resources. The impact of society, economics, law, politics, and philosophy on the management and utilization of our natural resources will also be examined. (3-0-3). FOR-375-0-0115

FOR 440. Use of Natural Resources for Leisure. (3) II. A survey of the concepts, history, present status, and goals of outdoor recreation for leisure, with particular emphasis on the role of using natural resources for leisure. Three hours rec. a week. FOR-440-0-0115

Undergraduate and graduate credit in minor field

FOR 550. Urban Forestry. (3) II. A study of the urban forest ecosystem to include amenities provided, composition, distribution, ownership, management, and monetary evaluation. Emphasis on publicly owned trees. Organization, staffing, financing, planning, legal considerations, and public relations in the effective department. Field project and trip required. Pr.: Senior standing. FOR-550-0-0115

FOR 575. Management of Water Resources for Leisure. (3) II. A study of the management of water resources for leisure time uses. The course investigates the use of rivers, lakes, reservoirs, and marine resources. Management considerations, including agency policy formation, legal rights, use conflicts and use valuation are covered. FOR-575-0-0115

FOR 590. Park Operations. (4) II. Planning, execution, and supervision of field maintenance and operations to include: job planning, budgeting, equipment selection and maintenance, and personnel practices. Basic park design considerations will also be covered. Pr.: Junior standing, FOR 375, FOR 440. FOR-590-1-5-0114

Undergraduate and graduate credit

FOR 635. Methods of Environmental Interpretation. (3) II. Principles and techniques necessary to communicate values of man's total environment to visitors in recreation and park areas. The synthesis and analysis of information necessary in various types of formal and informal presentations. The philosophy, design, and use of interpretive devices to communicate the understanding of man's total environment in recreation and park areas. Two hours rec. and three hours lab a week. Field trips required. Pr.: FOR 370 and 440. FOR-635-1-0115

FOR 641. Forestry Problems. (Var.) I, II, S. Work is offered in various fields of forestry. Pr.: Consent of instructor. FOR-641-3-0114

FOR 642. Parks and Recreation Problems. (Var.) I, II, S. Special problems and individual research in recreation. Designed for investigations and individual study not included in the student's normal course work. Pr.: Advanced undergraduate standing and consent of instructor. FOR-642-3-0115

FOR 645. Park Management Seminar. (1) I. Various exercises designed to offer the student opportunities to articulate and interact in structured small group situations, discussing Park and Recreational Area Management topics. FOR-645-0-0115

FOR 660. Travel, Tourism, and Park Management. (3) I, S. Advanced study of nonbusiness travel and tourism including its origins, present characteristics, economic impact, and leisure implications as they apply to park management and the use of natural resources. Field trips required at the expense of the student. Pr.: FOR 440 and junior standing. FOR-660-0-0115

FOR 699. Park Administration and Management. (3) I. Analysis of park administration and management and the detailed study of the principles of administrative behavior, using problem-solving models and case studies. Three hours rec. a week. Field trips required. Pr.: FOR 440 and 580. FOR-699-0-0115

General Agriculture

David J. Mugler,* associate dean and director of resident instruction
Frank R. Carpenter,* associate director
Lawrence H. Erpelding, associate director

Undergraduate credit

GENAG 101. Ag Orientation. (1) I. Objectives, organization and procedures of the College of Agriculture and the University are studied. Historical developments and projected trends in agriculture and the application of basic sciences to agriculture are presented. Required of freshmen in Agriculture. GENAG-101-0-0101

GENAG 200. Topics in Agriculture. (0-3) On sufficient demand. Selected issues in agriculture. May be repeated with change in topics. GENAG-200-0-0101

GENAG 290. Honors Program Orientation. (1) I. Open to new students (freshmen and transfer students) who are likely candidates for admission to the Honors Program in Agriculture. The course will acquaint students with the objectives and functioning of the Honors Program in Agriculture. Optional for qualified students upon invitation by the Director of Resident Instruction. GENAG-290-0-0101

GENAG 298. Honors Colloquium in Agriculture. (1) II. Open to freshmen and sophomores in the Honors Program for the College of Agriculture. Discussions and lectures on topics of interest to agriculture students. Seminar attendance may be included. GENAG-298-2-0101

GENAG 310. Honors Seminar. (1) I, II. Consists of seminars, lectures, convocations selected by the students from an approved list. At least nine of these programs are required and students will be required to make written reports on each program selected. GENAG-310-0-0101

GENAG 380. Honors Research Planning. (1) II. The student will develop literature screening methods and tools to prepare research proposals and obtain an overview of available research services. GENAG-380-0-0101

GENAG 390. Agricultural Employment. (1) I, II. Designed to assist the agriculture student in developing a career blueprint, understanding job markets and techniques to obtain employment including recruitment/placement services, resume construction, personal interviewing, job offer evaluation and

analysis, and monitoring involved in career planning. GENAG-390-0-0101

GENAG 410. Agricultural Student Magazine. (1-5) I, II. Planning, interviewing, preparing stories, headlines, layouts, and editing, for the Kansas State Agriculturist published by students in the College of Agriculture. Pr.: JMC 250 or JMC 275. GENAG-410-3-0101

Undergraduate and graduate credit

GENAG 500. Food Science Seminar. (1) II. Review of recent developments in the food science industry and in food science research. Food science literature and intradepartmental research will provide source material. Required of all food science undergraduates in Agriculture. GENAG-500-0-0101

GENAG 505. Comparative Agriculture. (1-4) Intersession. A travel-study program which is intended to acquaint students with agriculture of other countries and other parts of the U.S. and how it differs from Midwestern-Great Plains agriculture relative to climate, crops, soils, livestock practices, marketing, and cultural attitudes toward agriculture. Pr.: Consent of instructor. GENAG-505-0-0101

GENAG 510. Internship in Farm Broadcasting. (3) I, II. For advanced students interested in practical application of mass media principles and techniques. May include public affairs reporting, field interviewing, and supervised production of mass media materials. Pr.: Junior standing. GENAG-510-0-0101

GENAG 605. Extension Organization and Programs. (3) I. Development and objectives of Cooperative Extension and other University Adult Education programs, with emphasis on programs and procedures. Pr.: Senior standing or consent of instructor. GENAG-605-0-0101

GENAG 606. Principles of Teaching Adults in Extension. (3) II. Methods and principles of adult teaching, with emphasis on Cooperative Extension Service; application to various adult education programs. Pr.: Senior standing, juniors by consent of instructor. GENAG-606-0-0101

GENAG 630. Food Science Problems. (1-3) I, II, S. Research or related work with others, or a literature search. Written reports are required. Any field of food science for which the student has adequate background. Pr.: GENAG 302 and junior standing. GENAG-630-3-0101

GENAG 770. Professional Journalism Practicum. (1-4). For advanced students. Supervised practical work in the area of professional journalism and mass communications. Includes laboratory investigation, field work, and internships. Pr.: JMC 285 or RTV 330 and consent of supervising instructor. GENAG-770-3-0101

Graduate credit

GENAG 988. Scientific Writing. (1) I. Instruction in reporting research results, as in a scientific journal article, thesis, or dissertation. Course shows how to organize and communicate scientific findings logically, clearly, and precisely. Students who use results of their research should benefit most from the course. Pr.: M.S. or equiv. GENAG-988-0-0101

Grain Science and Industry

Charles Deyoe,* head of department

Professors Balding,* Deyoe,* Eustace,* Hoseney,* Ponte,* McEllhiney, Schoeff,* Seib,* Tsen,* Ward,* Wetzel,* and Wilcox;* Adjunct Professors Finney,* Hoover,* Pomeranz,* and Vetter;* Associate Professors Behnke* and Wingfield; Adjunct Associate Professor Chung;* Assistant Professors Davis* and Pedersen;* Adjunct Assistant Professors Bennett and Lookhart;* Instructors Curran and Stevens; Emeriti: Professors Farrell* and Shellenberger; Assistant Professor Miller.

Undergraduate study

The Department of Grain Science and Industry offers three curricula. One leads to a Bachelor of Science in Bakery Science and Management; another to a Bachelor of Science in Feed Science and Management; and the third to a Bachelor of Science in Milling Science and Management. In the baking science and milling science curricula, an option may be selected in administration, chemistry, or operations. The feed science curriculum has specialization electives emphasizing administration or engineering. This department also participates in the Food Science and Industry curriculum.

Bakery science and management

Bachelor of Science in Bakery Science and Management—
127 semester hours

Freshman

Fall semester	Course	Sem. hrs.
GENAG 101	Ag Orientation	1
GRSC 100	Principles of Milling	3
CHM 210	Chemistry I	4
ENGL 100	English Composition I	3
MATH 100	College Algebra	3
PE 101	Concepts in Physical Education	1
		15
Spring semester		
CHM 230	Chemistry II	4
ECON 110	Economics I	3
ENGL 120	English Composition II	3
MATH 150	Plane Trigonometry	3
GRSC 120	Introduction to Bakery Technology	2
		15

Sophomore

Fall semester		
SPCH 105	Oral Communication I	2
BIOL 198	Principles of Biology	4
	Humanities or social science electives	3
	Option A, B, or C	8
		17
Spring semester		
BIOL 555	Microbiology	5
	Humanities or social science electives	6
STAT 320	Elements of Statistics	3
	Option A, B, or C	3
		17

Junior

Fall semester		
GRSC 635	Baking Science I	2
GRSC 636	Baking Science I Lab	2
BIOL 520	Microbiology of Foods	4
	Option A, B, or C	8
		16

Spring semester

GRSC 737	Baking Science II	2
GRSC 738	Baking Science II Lab	1
GRSC 602	Cereal Science	3
	Option A, B, or C	9
		15

Senior

Fall semester

GRSC 634	Bakery Technology	3
	Option A, B, or C	13
		16

Spring semester

GRSC 625	Flour & Dough Testing	3
GRSC 651	Food & Feed Plant Sanitation	4
	Option A, B, or C	9
		16

Administration Option (A)

GRSC 505	Cereal & Feed Analysis	3
BIOCH 120	Introduction to Organic & Biological Chemistry	4
ECON 120	Economics II	3
MATH 205	General Calculus & Linear Algebra	3
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
CMPSC 200	Fundamentals of Computer Programming	4
ACCTG 211	Financial Accounting	3
ACCTG 221	Managerial Accounting	3
MANGT 420	Management Concepts	3
MKTG 440	Marketing	3
FINAN 450	Business Finance	3
	Electives	4

And 6 hours from the following:

ECON 530	Money & Banking	3
ECON 620	Labor Economics	3
ACCTG 312	Cost Accounting	3
MANGT 530	Industrial & Labor Relations	3
MANGT 531	Personnel & Wage Administration	3
MKTG 450	Consumer Behavior	3
MKTG 542	Sales Management	3
MANGT 630	Labor Relations Law	3
FINAN 650	Capital Budgeting	3
IE 501	Industrial Management	3

Chemistry option (B)

GRSC 505	Cereal & Feed Analysis	3
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Lab	2
CHM 271	Chemical Analysis	4
CHM 500	Descriptive Physical Chemistry	3
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry I Lab	2
CHM 550	Organic Chemistry II	3
CHM 551	Organic Chemistry II Lab	2
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5
	Electives	7

Operations option (C)

BIOCH 120	Introductory Organic & Biological Chemistry	5
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
MATH 222	Analytic Geometry & Calculus III	4
AGE 563	Farmstead Utilities	3
ME 212	Engineering Graphics I	2
PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5
CE 231	Statics A	3
CE 331	Strength of Materials A	3
IE 501	Industrial Management	3
ME 513	Thermodynamics I	3
	Electives	6

Feed science and management

Bacelor of Science in Feed Science and Management—
127 semester hours

Freshman

Fall semester	Course	Sem. hrs.
GENAG 101	Ag Orientation	1
GRSC 100	Principles of Milling	3
CHM 210	Chemistry I	4
ENGL 100	English Composition I	3
MATH 100	College Algebra	3
PE 101	Concepts in Physical Education	1
		15

Spring semester

CHM 230	Chemistry II	4
ENGL 120	English Composition II	3
MATH 150	Plane Trigonometry	3
SPCH 105	Oral Communication I	2
ME 212	Engineering Graphics I	2
	Required courses*	3
		18

Sophomore

Fall semester

GRSC 110	Flow Sheets	2
BIOL 198	Principles of Biology	4
ECON 110	Economics I	3
	Required courses*	6
		15

Spring semester

ASI 200	Fundamentals of Nutrition	3
	Social science electives	6
	Required courses*	7
		16

Junior

Fall semester

GRSC 510	Feed Technology I	4
GRSC 661	Qualities of Feed & Food Ingredients	3
	Social science electives	3
	Required courses*	6
		16

Spring semester

GRSC 750	Feed Technology II	4
BIOL 220	Bacteriology & Man	3
	Required courses*	9
		16

Senior

Fall semester

	Required courses*	16
		16

Spring semester

GRSC 651	Food & Feed Plant Sanitation	4
	Required courses*	12
		16

*Including specialization electives

Required courses

GRSC 300	Cereal & Feed Analysis	3
GRSC 630	Management Application	3
GRSC 650	Concepts of Modern Feed Mill Design	3

GRSC 785	Advanced Flour & Feed Technology	3
AGEC 520	Grain Marketing	3
BIOCH 120	Introduction to Organic & Biological Chemistry	5
MATH 205	General Calculus & Linear Algebra	3
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
STAT 320	Elements of Statistics	3
CMPSC 200	Fundamentals of Computer Programming	4
ACCTG 211	Financial Accounting	3

Specialization electives

GENAG 390	Agricultural Employment	1
GRSC 591	Commercial Feed & Food Manufacturing Internship	2
GRSC 655	Flour & Feed Mill Construction	3
GRSC 790	Grain Science Problems	2
ECON 530	Money & Banking	3
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
ACCTG 221	Managerial Accounting	3
ACCTG 312	Cost Accounting	3
FINAN 450	Business Finance	3
MANGT 390	Business Law I	3
MANGT 530	Industrial & Labor Relations	3
MANGT 531	Personnel & Wage Administration	3
MANGT 630	Labor Relations Law	3
MKTG 542	Sales Management	3
AMC 363	Farmstead Utilities	3
IE 501	Industrial Management	3
	Free electives	6

Milling science and management

Bachelor of Science in Milling Science and Management—
127 semester hours

Freshman

Fall semester	Course	Sem. hrs.
GENAG 101	Ag Orientation	1
GRSC 100	Principles of Milling	3
CHM 210	Chemistry I	4
ENGL 100	English Composition I	3
MATH 100	College Algebra	3
PE 101	Concepts in Physical Education	1
		15

Spring semester

CHM 230	Chemistry II	4
ENGL 120	English Composition II	3
MATH 150	Plane Trigonometry	3
SPCH 105	Oral Communication I	2
ME 212	Engineering Graphics I	2
	Option A, B, or C	3
		17

Sophomore

Fall semester

GRSC 110	Flow Sheets	2
BIOL 198	Principles of Biology	4
ECON 110	Economics I	3
	Option A, B, or C	7
		16

Spring semester

BIOL 220	Bacteria & Man	3
	Social science electives	6
	Option A, B, or C	7
		16

Junior

Fall semester

GRSC 500	Milling Technology I	4
AGRON 340	Market Grading Cereals	2
	Social science electives	3
	Option A, B, or C	7
		16

Spring semester

GRSC 602	Cereal Science	3
	Option A, B, or C	12
		15

Senior

Fall semester

GRSC 635	Baking Science I	2
GRSC 636	Baking Science I Lab	2
	Option A, B, or C	12
		16

Spring semester

GRSC 651	Food & Feed Plant Sanitation	4
	Option A, B, or C	12
		16

Administration option (A)

AGEC 520	Grain Marketing	3
GRSC 300	Cereal & Feed Analysis	3
GRSC 640	Advanced Flow Sheets	2
GRSC 655	Flour & Feed Mill Construction	3
GRSC 730	Milling Technology II (Lecture)	2
GRSC 785	Advanced Flour & Feed Technology	3
GRSC 630	Management Applications	3
BIOCH 120	Introduction to Organic & Biological Chemistry	5
ECON 120	Economics II	3
MATH 205	General Calculus & Linear Algebra	3
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
STAT 320	Elements of Statistics	3
CMPSC 200	Fundamentals of Computer Programming	4
ACCTG 211	Financial Accounting	3
	Electives	6

And 6 hours from the following:

ACCTG 221	Managerial Accounting	3
ECON 530	Money & Banking	3
ACCTG 312	Cost Accounting	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MANGT 530	Industrial & Labor Relations	3
MANGT 531	Personnel & Wage Administration	3
MKTG 450	Consumer Behavior	3
MKTG 542	Sales Management	3
MANGT 630	Labor Relations Law	3
FINAN 450	Business Finance	3
FINAN 650	Capital Budgeting	3
IE 501	Industrial Management	3

Chemistry option (B)

GRSC 300	Cereal & Feed Analysis	3
GRSC 625	Flour & Dough Testing	3
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Lab	2
CHM 271	Chemical Analysis	4
CHM 500	Descriptive Physical Chemistry	3
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry I Lab	2
CHM 550	Organic Chemistry II	3
CHM 551	Organic Chemistry II Lab	2
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
PHYS 213	Engineering Physics I	5

PHYS 214	Engineering Physics II	5
STAT 320	Elementary Statistics	3
	Electives	11

Operations option (C)

GRSC 640	Advanced Flow Sheets	2
GRSC 655	Flour & Feed Mill Construction	3
GRSC 730	Milling Technology II	4
GRSC 785	Advanced Flour & Feed Technology	3
BIOCH 120	Introduction to Organic & Biological Chemistry	5
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
MATH 222	Analytic Geometry & Calculus III	4
PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5
STAT 320	Elementary Statistics	3
AMC 353	Farmstead Utilities	3
CE 231	Statics A	3
CE 331	Strength of Materials A	3
	Electives	9

Graduate study

Major work leading to the degrees master of science and doctor of philosophy is offered in specialized administration, chemical, and engineering fields related to baking, feed, and grain milling. Requirements for entering graduate study in grain science are: mathematics, including college algebra; analytical chemistry; organic chemistry; a course in physics; a course in a biological science. When the committee believes it necessary, students will be required to take additional undergraduate courses to prepare them more completely for their programs.

Modern teaching and research facilities include a pilot bakery, feed mill and pilot flour mill. Associated laboratories permit the study of the physical, chemical, and biochemical properties of cereals and related products.

Graduates are prepared for positions of responsibility in the baking, feed and milling industries.

Undergraduate credit

GRSC 100. Principles of Milling. (3) I, II. Introduction to flour and feed milling processes. Two hours lec. and three hours lab a week. Pr.: One and one-half units of high school algebra. GRSC-100-1-7-0199

GRSC 110. Flow Sheets. (2) I, II. The construction and assembling of a flow sheet. Six hours lab a week. Pr.: GRSC 100, ME 212. GRSC-110-1-0199

GRSC 120. Introductory Bakery Technology. (2) II. An introduction to bakery science and technology. The processes used to produce baked goods on a large scale are emphasized. The products discussed include breads, dinner rolls, buns, sweet rolls, cakes, pastries, donuts, crackers, and cookies. Films and tours of bakeries are used to introduce students to the equipment and operations used to manufacture baked goods. Two hours lec. a week. Pr.: MATH 100. GRSC-120-1-0197

GRSC 121. Introductory Bakery Technology Laboratory. (1) II. This course provides experience in the production of various types of bakery foods, including: breads, white and dark; layer cakes; foam cakes; danish pastry; puff pastry; pies; and donuts. Formulations and functions of ingredients used to make these products will be discussed. Processing equipment designed to efficiently produce bakery foods will be studied and operated by the students. Three hours lab a week. Pr.: GRSC 120 or conc. enrollment. GRSC-121-1-0-0197

GRSC 305. Fundamentals of Food Processing. (3) II. The study of some basic ingredients used in food processing, principles of preserving and processing of foods, and food packaging. Pr.: A course in Chemistry. GRSC-305-0-0198

Undergraduate and graduate credit in minor field

GRSC 500. Milling Technology I. (4) II. Principles and practices of wheat flour milling with full scale equipment including grain storage, blending, cleaning, conditioning plant, and a modern pneumatic 200 hundred weight flour mill, with instrumentation and air conditioning, etc. Two hours lec. and six hours lab a week. Pr.: GRSC 100 and 110. GRSC-500-1-1099

GRSC 505. Cereal and Feed Analysis. (3) II. Methods of analyzing and testing cereal grains, cereal and feed products. One hour lec. and six hours lab a week. Pr.: CHM 250 and BIOCH 120. GRSC-505-1-0198

GRSC 510. Feed Technology I. (4) I. Introduction to the engineering aspects of formula feed manufacture, including principles of conveying, grinding, mixing, pelleting, and the formulation of concentrates, premixes, and rations using a digital computer. Three hours lec. and three hours lab a week. Pr.: ASI 200 and GRSC 110. GRSC-510-1-0198

GRSC 591. Commercial Feed and Food Manufacturing Internship. (2) I. A practical application of feed and food manufacturing technology during an eight-week summer internship with an active commercial feed and food manufacturing company. The course will stress applied aspects of commercial feed and food manufacturing, which can include, but not be limited to plant operations, maintenance, personnel, and labor relations, business management, warehousing, ingredient procurement, quality assurance, and fleet management. Pr.: Feed Tech I GRSC 510 or Mill Tech I GRSC 500 or Baking Science GRSC 635. GRSC-591-2-0199

Undergraduate and graduate credit

GRSC 602. Cereal Science. (3) I, II. The characteristics of cereals, legumes and their products. Three hours lec. a week. Pr.: BIOCH 120. GRSC-602-0-0198

GRSC 625. Flour and Dough Testing. (3) II. Physical and chemical methods used in evaluating wheat flour and dough. One hour lec. and six hours lab a week. Pr.: GRSC 602. GRSC-625-1-0197

GRSC 630. Management Applications in Grain Processing Industries. (3) II. This course deals with management principles and their specific application to the processing industries. Industry and Allied Trade personnel in management positions will give a number of lectures in their field of expertise. Special emphasis is placed on grain industry organizations, labor contracts, supervision, scheduling and planning, regulatory agencies, and cost control. Three hours lec. a week. Pr.: ECON I and either Feed Tech. GRSC 510, Milling Tech. I GRSC 500, or Intro. Baking Tech. GRSC 120; or consent of instructor. Junior standing. GRSC-630-0-0112

GRSC 634. Bakery Technology. (3) I. Physical and engineering principles involved in baking processes. Study of materials handling, fluid flow, and heat transfer as related to the bakery operation. The layouts of facilities to produce baked goods are studied, and the students prepare their own bakery layout. Current problems of the baking industry are discussed. Three hours lec. a week. Pr.: MATH 110, PHYS 113, and GRSC 738. GRSC-634-0-0197

GRSC 635. Baking Science I. (2) I. Introduction to properties of ingredients used in baking, reactions of ingredients during processing into baked products. Two hours lec. a week. Pr.: BIOCH 120. GRSC-635-0-0197

GRSC 636. Baking Science I Laboratory. (2) I, II. Laboratory exercises in theory land production of yeast leavened baked products. Six hours lab a week. Pr.: GRSC 635 or conc. enrollment. GRSC-636-1-0197

GRSC 640. Advanced Flow Sheets. (2) II. Design of flow diagrams for dry milling processes. Uses a combination of methods that lead to practical applications and analytical techniques. Six hours lab a week. Pr.: GRSC 500 or 510. GRSC-640-1-0199

GRSC 650. Concepts of Modern Feed Mill Design. (3) I. Principles of modern feed mill design, feasibility and equipment selection for plant improvements and new plant construction. Emphasis is placed on the effects of design on plant operating efficiency, product quality, and manufacturing costs. Pr.: GRSC 510, junior standing. GRSC-510-0-0198

GRSC 651. Food and Feed Plant Sanitation. (4) II. Sanitation in relation to processing, handling, and storage of human and animal foods. Emphasis on contaminants, control of causative agents, equipment and plant design, applicable laws and regulations. Three hours lec. and three hours lab a week. Pr.: Minimum of eight hours of biological science; junior standing. GRSC-651-1-0198

GRSC 655. Flour and Feed Mill Construction. (3) I. Mill engineering practices including sheet metal drafting, design of power transmission drives with belts, chains, and gears, and layout of new installations in existing plants. Design and layout of a grain or feed mill. Nine hours lab a week. Pr.: GRSC 500 or 510. GRSC-655-1-0199

GRSC 661. Qualities of Feed and Food Ingredients. (3) I. Physical and nutritional properties of feed and food ingredients and the effects of origin, processing, storage, and other factors upon them. Three hours lec. a week. Pr.: BIOCH 120. GRSC-661-0-0198

GRSC 710. Fundamentals of Grain Storage. (2) I. Interrelationships of moisture, molds, and insects in grain and products in storage; changes occurring in storage; proper drying, storage, control of insects, rodents, birds. Pr.: GRSC 602 or 661. GRSC-710-0-0199

GRSC 711. Principles of Food Analysis. (3) II. Principles of instrumentation and analysis, with emphasis on applications to quality control and research in the food industry. Pr.: CHM 271 or GRSC 300 and BIOCH 120. GRSC-711-0-0198

GRSC 715. Fundamentals of Processing Grains for Food. (3) I. Unit processes in the receiving and storing of grains: grinding, sifting, mixing, conveying, cooling, drying air qualities, air flow, compaction, extrusion, etc. This course is not open to undergraduate majors in the department. Two hours lec. and three hours lab a week. Pr.: A course in physics. GRSC-715-1-0198

GRSC 725. Feed Manufacturing Processes. (3) II. Study of the technical phases of formula feed manufacturing, equipment design and function, effect of processing and ingredients on nutritional acceptability of feeds and quality control. Two hours lec. and three hours lab a week. Pr.: MATH 100, 150, and ASI 320. GRSC-725-1-0198

GRSC 730. Milling Technology II. (2) I. Advanced studies of the entire gradual reduction system of wheat flour milling and the many unit process systems that constitute the milling system. The theory and practices of wheat conditioning, drying and aeration are elaborated upon. Two hours lec. a week. Pr.: GRSC 500. GRSC-730-0-0197

GRSC 731. Milling Technology II Laboratory. (2) I. The processes for milling other grains such as corn, oats, sorghum, different classes of wheat, and rye are studied in theory and by practice on small scale laboratory milling units. Six hours of lab a week. Pr. GRSC 730 or conc. enrollment. GRSC-731-1-0-0197

GRSC 737. Baking Science II. (2) II. Advanced study of the basic properties, chemical and biological reactions of ingredients used in production of bakery products. Special emphasis is placed on the fundamental principles of biological and chemical leavening and the rheological properties of dough batters and ingredients. Two hours lec. a week. Pr.: GRSC 635. GRSC-737-0-0197

GRSC 738. Baking Science II Laboratory. (1) II. A laboratory course to accompany GRSC 737. Three hours lab a week. Pr.: GRSC 737 or conc. enrollment. GRSC-738-1-0197

GRSC 750. Feed Technology II. (4) II. Advanced study of engineering principles of feed plant production, materials handling, grinding, pelleting, and other major processing operations. Three hours lec. and three hours lab a week. Pr.: GRSC 510, PHYS 114 or 214, and one course each in statistics and computer programming. GRSC-750-1-0198

GRSC 785. Advanced Flour and Feed Technology. (3) II. Design and use of exhaust systems, pneumatic conveying systems, bins and hoppers and the practical applications of electrical interlocking, instrumentation, and microprocessors to automatic mill control. Also other subjects such as sound measurement and explosion detection and prevention are covered. Two hours lec. and three hours lab a week. Pr.: GRSC 730 or 750. GRSC-785-1-0199

GRSC 790. Grain Science Problem. (Var.) I, II, S. Pr.: Consent of staff. GRSC-790-3-0196

Graduate credit

GRSC 801. Enzyme Applications. (2) I. Theories of enzyme action and function; commercial methods of manufacture and industrial uses, with special emphasis on the role of enzymes in the food industries. Two hours lec. a week. Pr.: BIOCH 521 and 522. GRSC-801-0-0196

GRSC 810. Advanced Cereal Chemistry. (3) II. The chemistry of cereal components at the molecular level. The role and interactions of the various constituents, their functionality in producing an end-product, and their influence on nutritional properties. Three hours lec. a week. Pr.: BIOCH 521 and GRSC 602. GRSC-810-0-0198

GRSC 899. Research in Grain Science. (Var.) I, II, S. Research may be used as basis for the M.S. thesis. Pr.: Consent of staff. GRSC-899-4-0196

GRSC 900. Graduate Seminar in Grain Science. (1) I, II. Discussion of technical problems in the cereal industry. One hour lec. a week. Attendance required of all graduate students in grain science. GRSC-900-2-0196

GRSC 999. Research in Grain Science. (Var.) I, II, S. Research may be used as basis for Ph.D. dissertation. Pr.: Consent of staff. GRSC-999-4-0196

Horticulture

P.H. Jennings, head of department

Professors Campbell,* Clayberg,* Greig,* Jennings,* Marr,* Mattson,* Morrison,* and Pair;* Associate Professors Carrow,* Khatamian,* Leuthold, Long,* van der Hoeven, and Wiest;* Assistant Professors Albrecht,* Gibbons, Hensley,* Kimmins, Rajashekar,* and Schueneman; Instructor Reid; Emeriti: Professors Abmeyer, Amstein, Keen, and Pickett.

Undergraduate study

The Department of Horticulture offers two four-year curricula (horticulture and horticultural therapy), and one two-year program (retail floriculture). The department also helps administer and advises students in two interdepartmental programs. These are the crop protection curriculum and the food science and industry curriculum.

Horticulture (4-year curriculum)

Bachelor of Science degree in Agriculture—127 semester hours

Horticulture is the science and art involving plants grown for intensive food production, aesthetic value, environmental improvement, or social-therapeutic effects. Students, in consultation with faculty advisors, may select courses of study in horticultural industries or horticultural science.

All students in the curriculum are required to take a core of general courses in addition to the agricultural and horticultural courses. Within each option the student is advised to take specific courses and restricted electives that give emphasis necessary for career goals.

General education requirements

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
GENAG 101	Ag Orientation	1
MATH 100	College Algebra*	3
ECON 110	Economics I	3
CHM 210	Chemistry I	4
	or	
CHM 110	General Chemistry	5
BIOL 210	General Botany	4
	or	
BIOL 198	Principles of Biology	4
PE 101	Concepts in Physical Education	1
	Humanities and/or social sciences	9
	Communications electives	3
ACCTG 211	Financial Accounting	3
CHM 190	Elementary Organic Chemistry	3
	Mathematics/statistics/computer science electives	3
	Biology elective	3
HORT 110	Introduction to Horticulture**	1

*Students in the science option take calculus

**Required of all freshman and sophomore majors

Horticulture and agriculture requirements for science and industries options

HORT 200	Plant Science	4
AGRON 305	Soils	4
	Entomology electives	2-4
PLPTH 510	Principles of Horticultural Plant Pathology	3
	Biology elective	3

Horticultural science option

The horticultural science option trains undergraduates in horticulture for professional positions requiring advanced degrees. Students in this option receive a horticultural background with additional emphasis in physical and biological sciences. Students electing this option take the general education requirements and the horticulture and agriculture requirements and the following additional requirements:

AS1 500	Genetics	3
CHM 230	Chemistry II	4
PHYS 115	Descriptive Physics	4
	Calculus electives	3
STAT 340	Biometrics I	3
	Computer science elective	4
BIOCH 510	General Plant Biochemistry	4
BIOL 500	Plant Physiology	4
	Horticulture electives	17
	Free electives	16

Horticultural industries option

The horticultural industries option trains students interested in the production and maintenance of horticultural crops and the related businesses. Students receive a broad background in horticulture and concentrate in one of five horticultural specializations. Requirements in addition to general education and agriculture are as follows:

Horticulture courses		18
HORT 400	Plant Propagation	3
	Horticulture electives	21
	Business electives	9
	Free electives	12-13

Horticultural Therapy (4-year curriculum)

Bachelor of Science in Agriculture—127 semester hours

The first horticultural therapy undergraduate training program in the United States was developed in 1971 as a cooperative agreement between Kansas State University and the Menninger Foundation, Topeka, Kansas. Courses are required in general education, horticulture and agriculture, horticultural therapy, and humanities and/or social sciences. Specialization electives may be selected in community-based programs, corrections, gerontology, education, developmental disabilities, or mental health. Clinical internships are required during the senior year at approved psychiatric hospitals, rehabilitation centers, veterans administration hospitals, correctional agencies, geriatric and retirement centers, or community-based agencies. The requirements of the curriculum are as follows:

General education requirements

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
GENAG 101	Ag Orientation	1
MATH 100	College Algebra	3
ECON 110	Economics I	3
CHM 110	General Chemistry	5
BIOL 210	General Botany	4

PE 101	Concepts in Physical Education	1
	Statistics elective	3

Horticulture and agriculture requirements

HORT 255	Introduction to Horticultural Therapy	1
HORT 361	Herbaceous Plant Materials	3
HORT 374	Woody Plant Materials I	3
HORT 180	Basic Floral Design Concepts	3
HORT 400	Plant Propagation	3
HORT 525	Horticulture for Special Populations	3
HORT 530	Horticultural Therapy Seminar	1
HORT 570	Greenhouse Management	3
HORT 520	Fruit Production	3
HORT 560	Vegetable Crop Ecology	3
HORT 508	Landscape Maintenance	3
	or	
HORT 612	Turf Management	3
HORT 200	Plant Science	4
PLPTH 510	Principles of Horticultural Plant Pathology	3
	Entomology electives	2-4
AGRON 305	Soils	4
HORT 535	Horticultural Therapy Field Techniques	3

Humanities and/or social science requirements

PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3
	Group Methods elective	3
PSYCH 505	Abnormal Psychology	3
EDAF 215	Educational Psyehology I	3
	Art electives	2
	Specialization electives	15

Internship requirement

HORT 540	Horticultural Therapy Field Experiences	12

Electives

Free electives		7-9

Retail floriculture (4 semesters)

Associate of Agriculture degree

This is a technical program combining supervised practical training with university course work in preparation for employment and management in a retail flower shop. The first phase of instruction is at Kansas State University where the course sequence is completed during four semesters. In the program the student serves an apprenticeship at a selected retail florist business. Every effort is made to approve a florist shop in a city of the student's choice. The apprentice will be an employee of the flower shop during one semester of training and will receive a salary sufficient to meet normal living expenses.

First semester

BIOL 210	General Botany	4
HORT 325	Indoor Plants & Flowers	2
ENGL 100	English Composition I	3
HORT 190	Horticultural Science	3
ART 100	Design I	2
PE 101	Concepts in Physical Education	1
		15

Second semester

HORT 180	Basic Floral Design Concepts	3
HORT 200	Plant Science	4
ART 200	Design II	2
ECON 110	Economics I	3
	Communications elective	3
		15

Third semester

HORT 380	Advanced Floral Design	3
ENGL 120	English Composition II	3
PSYCH 110	General Psychology	3
HORT 361	Herbaceous Plant Materials	3
MATH 100	College Algebra	3
	or	
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 20-	Computer Language Lab	2
		15/16
HORT 290	Florist Shop Management Internship	1

Fourth semester

HORT 570	Greenhouse Management	3
ACCTG 211	Financial Accounting	3
	Business electives	6
	Social science elective	3
		15

Graduate study

Both the master of science and doctor of philosophy degrees are offered in the horticulture department in the fields of fruit and vegetable crops and in ornamental horticulture, including floriculture and turf science. The master of science degree is offered in the field of horticultural therapy. Specialization areas for the master of science and doctor of philosophy degrees include: crop physiology, growth regulators, herbicides/weed management, nutrition/fertility, soil/plant relationships, stress physiology, breeding/genetics, crop protection, and food science. The last three of these are interdepartmental programs. Specialization areas for the master of science degree in horticultural therapy include: community programs, corrections, developmental disabilities, education, gerontology, and mental health. A B.S. degree from a recognized college or university whose undergraduate program is substantially equivalent to the program at KSU is prerequisite to admittance to graduate work in this department.

The department has a variety of facilities for both undergraduate and graduate study and research. These include the orchards and vegetable plots at the horticultural farm, experimental fields, turf farm, greenhouses, cold storage units, controlled atmosphere chambers, and research laboratories equipped for scientific plant studies. Many horticulture courses require student visitations and work at these facilities.

Undergraduate credit

HORT 110. Introduction to Horticulture. (1) I. A survey of commodities and specialty areas in the field of horticulture and the career opportunities they offer. One hour lec. a week, to be taught by specialists in each area. Required of freshman and sophomore majors and open to all non-majors. HORT-110-0-0108

HORT 153. Home Horticulture. (2) II. An introduction to the basic concepts and practices of horticulture. Culture, use, and relationships of horticultural plants in the garden, yard, and home are stressed. Two hours of lec. a week. For non-major students only. HORT-153-0-0109

HORT 155. Home Horticulture Laboratory. (1) II. The application of horticultural practices with emphasis on the establishment, maintenance, and use of horticultural plants in and around the home. Three hours lab a week. Pr.: HORT 153 or conc. enrollment. HORT-155-0-0109

HORT 180. Basic Floral Design Concepts. (3) I, II. An introduction to the use of flowers and related products with emphasis on fundamentals of design. Two hours rec. and three hours of studio a week. For majors or non-majors. HORT-180-1-0109

HORT 190. Horticultural Science. (3) I. An orientation to horticultural practices and concepts which will be used as building blocks toward a major in horticulture. Three hours rec. a week. HORT-190-0-0108

HORT 200. Plant Science. (4) II. Study of the principles of the production of economic plants, including morphology, taxonomy, physiology, ecology, propagation, preservation, storage, and utilization. Three hours lec. and one two-hour lab a week. HORT-200-1-0108

HORT 255. Introduction to Horticultural Therapy. (1) I, II. Introduction to horticultural therapy programs, activities, and resources. Orientation to the profession, roles, and functions of horticultural therapists; and to the broad range of skills required to work with psychiatric, developmentally disabled, geriatric, corrections, and non-institutional clients. HORT-255-0-0108

HORT 290. Florist Shop Internship. (1) I, II, S Internship. Principles of commercial florist shop operations including exposure to the multiple phases of work in a retail flower shop. Retail florist shops with wire services will be selected for the internship. HORT-290-2-0109

HORT 299. Flower Judging. (1) II. Principles of judging cut flowers, flowering potted plants, and foliage plants for flower shows and judging contests. Pr.: Consent of instructor. HORT-299-1-0109

HORT 305. Plants, Man, and Environment. (2). On sufficient demand. A study of how plants and man interact and how this interaction influences their environmental quality. Recognition of the essential nature of plants and their role in modifying the environment in which we live will be the primary objective. Two hours rec. a week. Non-major. No prerequisites. HORT-305-0-0109

HORT 325. Indoor Plants and Flowers. (2) I, II. The selection, culture, and use of plants in homes, schools, offices, and public buildings. Two hours lec. a week. No prerequisites. HORT-325-0-0109

HORT 333. Gardening for Food. (2) II. An introductory course on how to plant, culture, harvest and store fruits and vegetables from the home standpoint. Two hours rec. a week. Non-major. No prerequisites. HORT-333-0-0108

HORT 361. Herbaceous Plant Materials. (3) I. Annual and perennial flowers, and ornamental grasses for ornamental planting. Pr.: BIOL 210 or equiv. HORT-361-1-0109

HORT 374. Woody Plant Materials I. (3) I. Identification, ornamental characters, site requirements and use of woody ornamental deciduous trees and shrubs with special emphasis on the cultivated varieties. Field trips required. Pr.: Botany BIOL 210, Plant Science HORT 200 or Principles of Biology BIOL 198. Two hours lec. and three hours lab a week. HORT-374-1-5-0109

HORT 375. Woody Plant Materials II. (3) II. Identification, ornamental characters, site requirements and use of woody ornamental conifers, broad leaf evergreens, vines, ground covers, deciduous flowering shrubs, and small to medium size flowering trees. Field trips required. Pr.: Woody Plant Materials I HORT 374. Two hours lec. and three hours lab a week. HORT-375-1-5-0109

HORT 380. Advanced Floral Design Concepts. (3) I. Stylized floral design and related management for the commercial florist shop, including corsages, wedding decorations, funeral pieces, and party/banquet decorations. Two hours rec. and three hours studio a week. Pr.: HORT 180. HORT-380-1-0109

HORT 390. Horticulture Topics.(Var.) I, II, S. Lectures and discussion of topics of importance to undergraduate majors. Pr.: Consent of instructor. HORT-390-0-0108

HORT 400. Plant Propagation. (3) I, II. Designed to develop proficiency in the various skills and techniques necessary for propagation of horticultural plants. Basic fundamentals of seed structure and vegetative makeup of plants are emphasized. Two hours rec. and three hours lab a week. Pr.: HORT 200. HORT-400-1-0109

HORT 450. Landscape Development. (3) I. The location and arrangement of plants and other permanent features of the landscape around homes and other similar areas. Two hours lec. and two hours lab a week. Pr.: HORT 374 and HORT 375. HORT-450-1-7-0109

Undergraduate and graduate credit in minor field

HORT 508. Landscape Maintenance. (3) II. Fundamental principles of producing, planting, and maintaining ornamental plantings of trees, shrubs, perennials, and turf in the nursery, home grounds, parks, and similar areas. Two hours rec. and two hours lab a week. Pr.: HORT 374 and/or HORT 375. HORT-508-1-7-0109

HORT 520. Fruit Production. (3) I. Principles and practices of cultivating fruit and nut crops commercially and in the home grounds. Laboratory offers experiences in pomological practices. Two hours rec. and three hours lab a week. Pr.: HORT 200 or equiv. HORT-520-1-0108

HORT 525. Horticulture for Special Populations. (3) I, II. An intensive study of the concepts and methods of using plants and gardening as therapeutic activities with developmentally disabled, geriatric, economically and socially disadvantaged, emotionally disturbed, or educationally deprived clients. Two hours rec. and two hours lab a week. Pr.: BIOL 210 or HORT 200. HORT-525-1-7-0109

HORT 530. Horticultural Therapy Seminar. (1) I, II. Guest lecturer and student presentations of topics relating to professionalism, current issues, or goals of horticultural therapy. The course is intended to help students focus expectations and assumptions about a professional career in horticultural therapy and to give them practice in articulating their understanding of the field. Pr.: HORT 255 and HORT 525. HORT-530-0-0109

HORT 535. Horticultural Therapy Field Techniques. (3) I, II. Students under supervision will plan, conduct, and evaluate horticultural therapy activities at Manhattan institutional sites selected according to student's area of interest. A weekly discussion session addresses evaluation and issues of professionalism. Two hours rec. and two hours lab a week. Pr.: HORT 525. HORT-535-1-7-0109

HORT 540. Horticultural Therapy Field Experiences. (12) I, II. Supervised training at institutions with horticultural therapy programs to gain experience in the application and use of horticultural activities for special populations. Six months intensive training provided within student's area of specialization. Pr.: HORT 535. HORT-540-2-0109

HORT 551. Landscape Contracting. (3) II. The use, interpretation, and development of planting plans (including contracting, construction, and specifications) as applied to landscape horticulture. Pr.: HORT 374 and/or HORT 375. HORT-551-1-0109

HORT 560. Vegetable Crop Ecology. (3) II. Study of ecological principles involved in the production of vegetable crops, with emphasis on environmental conditions. Two hours lec. and three hours lab or field trips a week. Pr.: HORT 200. HORT-560-1-0108

HORT 570. Greenhouse Management. (3) I, II. Greenhouse construction, environmental control, crop scheduling and management. Two hours rec. and three hours lab a week. Pr.: HORT 200. HORT-570-1-0109

HORT 575. Nursery Management. (3) II. A study of the various practices and methods of operating a commercial nursery for the production of ornamental wood plants used for landscaping purposes. Two hours rec. and three hours lab a week. Pr.: BIOL 210, HORT 200 and HORT 400 and AGRON 305. HORT-575-1-0109

HORT 580. Foliage Plant Production.(3) II. In even years. The commercial production techniques of foliage plants and foliage plant utilization. Three hours lec. a week. Pr.: HORT 570. HORT-580-0-0109

Undergraduate and graduate credit

HORT 612. Turf Management. (3) I. Establishment and maintenance concepts for lawn and recreational turf. Three hours rec. a week. Pr.: HORT 200, AGRON 305. HORT-612-0-0109

HORT 615. Construction of Turf Sites. (1) I. In odd years. Practical aspects of turf management are emphasized including: grass identification, reports and budgets, and construction methods for recreational turf sites. Pr.: HORT 612. HORT-615-1-4-0109

HORT 616. Turf Water Management. (1) I. In even years. Practical and theoretical aspects of water management for turf areas. Includes irrigation and drainage. Pr.: HORT 612. HORT-616-1-4-0109

HORT 620. Arboriculture. (3) I. Principles and practices of maintaining shade and ornamental trees under urban environments. Two hours rec. and three hours lab a week. Pr.: HORT 200 and HORT 374. HORT-620-1-0109

HORT 625. Floriculture. (3) II. The principles and commercial practices for producing greenhouse florist crops. The relationship is stressed between a plant's physiological response and its greenhouse environment. Two hours rec. and three hours lab a week. Pr.: HORT 570. HORT-625-0-0109

HORT 638. Horticulture Field Study. (1-4) I, II, S. Principles of commercial horticulture activity including exposure to multiple phases of the working horticulture enterprise. Students will be placed according to specific area interest. For juniors and seniors in horticulture only. Pr.: HORT 150 and 200, plus one other core curriculum horticulture course. HORT-638-2-0108

HORT 640. Horticultural Problems. (Var.) I, II, S. Problems and reports in floriculture, olericulture, ornamental horticulture, pomology, turfgrass, and horticultural therapy. Pr.: Consent of instructor. HORT-640-3-0109

HORT 682. Pesticide Application Technology. (3) II. The equipment, procedures, and techniques used in applying pesticides. Emphasis is placed on types, theory, operation, calibration, and maintenance of application equipment. Two hours rec. and three hours lab a week. Pr.: One course in entomology, plant pathology or weeds. HORT-682-1-6-0108

HORT 700. Vegetable Crop Physiology. (3) I. In even years. Study of applied physiological responses of selected vegetable crops on grade, quality, storage and marketing of these products. Three hours lec. a week. Field trip required. Pr.: HORT 200. HORT-700-0-0108

HORT 706. Turfgrass Science. (3) II. A study of environmental stresses on turfgrass growth and management. Microclimate effects on turf are studied. Temperature, moisture, aeration, light, traffic aspects are discussed. Three hours rec. a week. Pr.: HORT 612. HORT-706-0-0109

HORT 730. Fruit Science. (3) II. Detailed discussion of selected and important pomological topics. Laboratory includes exercises on practical and research topics with emphasis on latter. Two hours rec. and three hours lab a week. Pr.: HORT 520. HORT-730-1-0108

HORT 740. Horticultural Plant Breeding. (3) I. In even years. Breeding methods and their application to the economic improvement of flowers, fruits, shrubs, trees, turfgrasses, and vegetables. Pr.: ASI 500 or equiv. HORT-740-0-0108

HORT 750. Environmental Plant Stress. (3) II. Physiological, biochemical, and morphological factors involved in stress development and resistance will be discussed. Pr.: BIOL 500. HORT-750-0-0108

HORT 780. Topics in Horticulture. (Var.) I, II, S. Discussion and lectures of important papers and contributions in this field. Pr.: Consent of instructor. HORT-780-0-0108

HORT 792. Handling and Processing Fruits and Vegetables. (3) I. In odd years. Field trips required. Principles of harvesting, grading, handling, nutritive value and processing fruits and vegetable crops. Pr.: BIOL 198 or equiv. and a course in organic chemistry or biochemistry. HORT-792-0-0108

Graduate credit

HORT 846. Plant Research Methods. (3) I. Review of history and forms of plant science literature. Discussion on selecting experimental procedures, interpreting data, and reporting results. Two hours rec. and two hours lab a week. Pr.: One statistics course or consent of instructor. HORT-846-1-0109

HORT 850. Advances in Horticultural Therapy. (3) II. New developments and applications of gardening or horticultural activities for special populations will be emphasized. Procedures for management of horticultural therapy programs, designing therapeutic or rehabilitation activities, and evaluation methods will be discussed. Reading of selected research publications relating to horticultural therapy will be assigned. Pr.: HORT 661 and HORT 662. HORT-850-0-0108

HORT 898. Master's Report. (2) I, II, S. Investigations in pomology, olericulture, floriculture, ornamental horticulture, turfgrass, or horticultural therapy for preparation of master's report. Pr.: Consent of instructor. HORT-898-4-0108

HORT 899. Research—M.S. (Var.) I, II, S. Investigations in pomology, olericulture, floriculture, ornamental horticulture, turfgrass, or horticultural therapy for preparation of master's thesis. Pr.: Consent of instructor. HORT-899-4-0108

HORT 910. Topics in Plant Breeding. (Var.) I, II, S. Discussion and lectures on important papers and contributions in this field. Pr.: Consent of instructor. (Joint listing with Dept. of Agronomy. See AGRON 910.) HORT-910-0-0108

HORT 921. Horticultural Crop Nutrition. (2) I. In odd years. Nutritional requirements of horticultural crops and factors affecting these requirements. Review of current literature on horticultural crop nutrition. Two hours lec. or reports a week. Pr.: HORT 200, AGRON 305 and BIOL 500 or equiv. HORT-921-0-0108

HORT 930. Topics in Plant Genetics. (Var.) I, II, S. Discussion and lectures on important papers and contributions in this field. Pr.: Consent of instructor. (Joint listing with Dept. of Agronomy, AGRON 930.) HORT-930-0-0108

HORT 940. Plant Regulators in Horticulture. (3) I. In even years. A study of synthetic plant regulators used to initiate, induce, promote, inhibit, or alter characteristics of horticultural plants and crops. Included are kinds and types of exogenous plant regulators used on crops, their activity, plant responses, benefits and problems, and application technology. One hour lec. and two hours rec. a week. Pr.: BIOCH 510 or BIOL 500 and one graduate plant commodity course. HORT-940-0-0108

HORT 951. Horticulture Graduate Seminar. (1) I, II. A discussion of investigational works in the various branches of horticulture. HORT-951-0-0108

HORT 999. Research in Horticulture, Ph.D. (Var.) I, II, S. Investigations in pomology, olericulture, floriculture, ornamental horticulture, and turfgrass. Data collected may form basis for a thesis or dissertation. Pr.: Consent of instructor. HORT-999-4-0108

Natural Resource Management

Undergraduate study

Bachelor of Science in Agriculture—127 semester hours

Students interested in natural resource management are referred to the departments of agronomy and forestry, which offer options in soil and water conservation and range management, and park resource management, respectively. These courses of study provide training for the individual interested in interpretation and application of ecological principles for solving environmental problems involving renewable natural resources. Each option contains courses in the social sciences and humanities which help make students sensitive to man and his environmental surroundings, courses in the physical and biological sciences which help them understand and solve environmental problems, and courses in communications which help make it easy to interpret, convey, and employ solutions.

Park resource management*

Biological and physical sciences

BIOL 210	General Botany	4
BIOL 433	Wildlife Conservation	3
BIOL 529	Fundamentals of Ecology	3
CHM 110	General Chemistry	5
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 206	BASIC Language Lab	2
GEOL 100	Introduction to Geology	3
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
PHYS 115	Descriptive Physics	4
STAT 330	Elementary Statistics	3
STAT 340	Biometrics	3

Social sciences/humanities

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
ECON 110	Economics I	3
PE 101	Concepts of Physical Education	1
POLSC 110	Introduction to Political Science	
	or	
POLSC 520	State & Local Government	3
SOCIO 211	Introduction to Sociology	3
SPCH 106	Oral Communication IA	3

*See Department of Forestry

Forestry

FOR 285	Introduction to Forestry	3
FOR 330	Dendrology I	2
	or	
HORT 374	Woody Plants	3
FOR 340	Dendrology II	2
	or	
HORT 375	Woody Plants	3
FOR 350	Park Field Studies	2
FOR 375	Introduction to Natural Resource Management	3
FOR 440	Use of Natural Resource Management for Leisure	3
FOR 590	Park Operations	4
FOR 635	Methods of Environmental Interpretation	3
FOR 645	Park Management Seminar	1
FOR 699	Park Administration Management	3

Electives—select four courses from:

AGRON 501	Range Management	3
GEOG 205	Remote Sensing of the Environment	2
FOR 550	Urban Forestry	3
FOR 575	Management of Water Resource for Leisure	3
FOR 660	Travel, Tourism & Park Management	3
JMC 630	Public Relations	3
PLPTH 510	Plant Pathology	3

Agriculture

AGEC 625	Natural Resource Economics	3
AGRON 305	Soils	4
ENTOM 312	General Entomology	2
ENTOM 313	General Entomology Lab	1
GENAG 101	Ag Orientation	1
HORT 200	Plant Science	4
HORT 612	Turf Management	3
HORT 620	Arboriculture	3

Plant Pathology

Bachelor of Science in Agriculture under the crop protection curriculum, which includes a plant pathology science option

Fred W. Schwenk,* head of department

Professors Johnson,* Schwenk,* Stuteville,* and Willis;* Associate Professors Browder,* Chatterjee,* Claflin,* and Gill;* Assistant Professors Boekus,* Crowe,* Eversmeyer,* Hetriek,* Kemble,* Leach, Leslie, Lommel,* Pfender,* Sauer,* and Tisserat; Adjunct Assistant Professors Bidney,* Martin,* and Sim; Assistant Instruetor Todd; Emeriti: Professors Hansing* and King.

Plant pathology is the study of plant diseases, their eeonomie effects, causes, nature, and eontrol. Opportunities for graduates in plant pathology include researeh and development.

Undergraduate study

Students interested in the broad aspects of plant disease and inseet and weed control should consider the pest management or business and industries option of the crop protection eurriculum. Students who wish to specialize in the study of plant diseases should consider the plant pathology science option of the crop protection curriculum, discussed below.

Students majoring in the plant pathology science option of the crop protection curriculum take, in addition to the general requirements for the curriculum, the following courses. See also information earlier in this college section.

Major courses		**Sem. hrs.**
BIOL 210	General Botany	4
AGRON 200	Plant Science	4
BIOL 640	Introductory Mycology	4
PLPTH 510	Principles of Horticultural Plant Pathology	3
	or	
PLPTH 520	Principles of Field Crop Pathology	3
	Electives in the botanical sciences	9

Supporting courses		
BIOL 555	Microbiology	4
ASI 500	Genetics	3
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
AGRON 305	Soils	4
MATH 150	Plane Trigonometry	3
STAT 340	Biometries I	3
PHYS 113	General Physics I	4

One of the following:

PHYS 193	Descriptive Metcorology	3
PHYS 114	General Physics II	4

One of the following:

BIOCH 510	General Plant Biochemistry	4
BIOCH 521	General Biochemistry	3
	and	
BIOCH 522	General Biochemistry Laboratory	2
BIOCH 655	Biochemistry I	3
	and	
BIOCH 656	Biochemistry Laboratory	2

One of the following:

ENTOM 300	Economic Entomology	3
ENTOM 312	General Entomology	2
	and	
ENTOM 313	General Entomology Laboratory	1

One or more of the following:

MATH 220	Analytic Geometry & Calculus I	4
CMPSC 200	Fundamentals of Computer Programming	3

One or more of the following:

ASI 102	Principles of Animal Science	3
ASI 103	Animal Sciences & Industry	1
AGEC 100	Principles of Agricultural Economics	3
AGE 300	Engineering in Agriculture	4
	plus	
An elective in accounting or business administration		3

Graduate study

The graduate program in plant pathology leads to the master of science and doctor of philosophy degrees. Prerequisite to graduate study is possession of a bachelor's degree from an accredited college. Students often enter advanced work in plant pathology following a major in agronomy, biology, botany, horticulture or similar area as well as from plant pathology. Specialized areas of study include biology, physiology, ecology, and epidemiology of disease development; disease resistanee; disease control; host-parasite relationships; host-mycorrhizal interactions; plant molecular genetics; genetics and cytogenetics of disease resistance; and protoplast, cell, and tissue culture and plant regeneration. Research is conducted on diseases of grain and forage crops, fruits, vegetables, ornamentals, turf, and stored grain.

Departmental facilities include experimental field plots, greenhouses, controlled environment growth chambers, incubators, and well-equipped research and teaching laboratories. Students have access to the electron microscope laboratory, scanning electron microscope laboratory, computing center, herbarium, and science libraries. Graduate research assistantships or employment in departmental research projects may be available to outstanding students.

Undergraduate and graduate credit in minor field

PLPTH 510. Principles of Horticultural Plant Pathology. (3) I. An introductory course in the principles of Plant Pathology that stresses causes, effects, and control of soft rots, seedling blights, vascular wilts, leaf spots and blights, cankers, and galls of vegetables, fruits, ornamentals, and turf, caused by biotic and abiotic agents. Two hours lec., one two-hour lab a week. Pr.: BIOL 198, 210, or equiv. Junior standing. PLPTH-510-1-5-0404

PLPTH 520. Principles of Field Crop Pathology. (3) II. An introductory course in the cause, effect, and control of plant diseases, emphasizing but not limited to diseases of field crops. Two hours lec., one two-hour lab a week. Pr.: BIOL 198, 210, or equiv. PLPTH-520-1-5-0404

Undergraduate and graduate credit

PLPTH 606. Plant Disease Diagnosis. (1) II, first half of the semester. Theory and principles, with laboratory practiee, in plant disease diagnosis. Designed as an introduction to PLPTH 707, 708, and 709. Four hours combined lec. and lab a week. Pr.: An introductory course in Plant Pathology. PLPTH-606-1-6-0404

PLPTH 613. Plant Disease Control. (3) I. Disease control strategies are developed in a practical manner. Control economics and practices are considered in relation to principles and current research. Biological, cultural, physical, chemical, and regulatory methods are discussed. Two hours lec., one two-hour lab a week. Pr.: PLPTH 510 or 520. PLPTH-613-1-5-0404

PLPTH 705. Ecology and Epidemiology of Plant Pathogens. (3) I. Even-numbered years. This course deals with the ecological relationships of soilborne and foliar pathogens, as well as the biological and environmental factors which influence the spread of plant diseases. Five hours combined lec./lab a week. Pr.: PLPTH 510 or 520. PLPTH-705-1-4-0404

PLPTH 707, 708, 709. Plant Disease Diagnosis Lab, Spring, Summer, Fall. Practical experience in diagnosing diseases of field crops and horticultural plants. Six hours lab a week. Students may take any or all labs, in any sequence. Diseases studied will be those available that term, emphasizing, but not restricted to, those in the student's area of interest. Overnight field trips may be required. Pr.: PLPTH 606 Plant Disease Diagnosis and BIOL 640 Mycology.

PLPTH 707. Plant Disease Diagnosis Lab, Spring. (1) II, last half of the semester. PLPTH-707-1-1-0404

PLPTH 708. Plant Disease Diagnosis Lab, Summer. (1) S. PLPTH-708-1-1-0404

PLPTH 709. Plant Disease Diagnosis Lab, Fall. (1) I, first half of the semester. PLPTH-709-1-1-0404

PLPTH 711. Plant Tissue Culture and Regeneration. (3) II. In odd years. Plant tissue culture principles, techniques, and applications, with emphasis on plant regeneration from protoplasts and the use and potential of this procedure for crop improvement through genetic engineering. Research-level skills in this area will be taught in lab. Two hours lec. and three hours lab a week. Pr.: Biochemistry or Plant Physiology; Genetics; and consent of instructor. Enrollment limited to 10 students. PLPTH-711-1-4-0404

PLPTH 721. Plant Pathogens I. (3) I. A study of the principles and techniques of Plant Pathology with emphasis on crop diseases caused by fungi, bacteria, and abiotic factors. Five hours combined lec. and lab a week. Pr.: PLPTH 510 or 520 or equiv. PLPTH-721-1-4-0404

PLPTH 722. Plant Pathogens II. (3) II. A study of the principles and techniques of Plant Pathology with emphasis on crop diseases caused by viruses and nematodes. Six hours combined lec. and lab a week. Pr.: PLPTH 510 or 520. PLPTH-722-1-4-0404

PLPTH 750. Problems in Plant Pathology. (1-3) I, II, S. Work is offered in general Plant Pathology, plant virology, plant nematology, disease physiology, epidemiology, and disease diagnosis. Pr.: Background of courses needed for the problem undertaken. PLPTH-750-3-0404

Graduate credit

PLPTH 805. Phytopathogenic Bacteria. (3) II. Even-numbered years. Taxonomy of phytopathogenic bacteria; molecular aspects of bacterial pathogenicity with emphasis on cell surface components, metabolic patterns, toxins, extracellular enzymes, genetics and plasmids. Two hours lec., one three-hour lab a week. Pr.: PLPTH 721 and 722. PLPTH-805-1-4-0404

PLPTH 810. Plant Disease Physiology. (3) II. Even-numbered years. A discussion of changes in the physiology and biochemistry of the host and pathogen, and their interaction during infection and disease development. Examples from fungal, bacterial and viral diseases will be utilized. Resistant and susceptible interactions will be considered. Current hypotheses to explain the nature of pathogen recognition and disease resistance will be evaluated. Two hour lec., one two-three hour lab a week. Pr.: BIOL 500 and a course in biochemistry. PLPTH-810-1-4-0404

PLPTH 815. Advanced Techniques in Plant Cytogenetics. (2) II. Odd-numbered years. An advanced course in research techniques in genome analysis of higher plants emphasizing genetic mapping by use of various cytogenetic stocks. Laboratory, greenhouse and field experiments involved in chromosomal location of morphological and disease resistance traits are performed. Pr.: AGRON 770 or BIOL 615 or equiv. PLPTH-815-0-0404

PLPTH 860. Host Plant Resistance to Disease. (2) II. Odd numbered years. A consideration of basic and applied aspects of controlling plant disease through host plant resistance. The relationships of disease components are elucidated, and types and characteristics of plant disease resistances are considered. Methods of using disease resistance in crop production are developed. Two hours lec./discussion a week. Pr.: PLPTH 510 or 520 and a basic course in genetics. PLPTH-860-0-0404

PLPTH 870. Seminar in Plant Pathology. (1) I, II. Reports in the field of plant pathology. Pr.: Consent of instructor. PLPTH-870-0-0404

PLPTH 898. Master's Report. (2) I, II, S. Pr.: Background of courses needed for the topic undertaken. PLPTH-898-4-0404

PLPTH 899. Research in Plant Pathology for the M.S. Degree. (Var.) I, II, S. Work is offered in general plant pathology, plant virology, plant nematology, disease physiology, and epidemiology. Pr.: Sufficient background to conduct the line of research undertaken. PLPTH-899-4-0404

PLPTH 920. Topics in Plant Pathology. (Var.) I, II, S. Discussions and lectures on important areas and contributions in the field of phytopathology. Pr.: Graduate standing. PLPTH-920-0-0404

PLPTH 999. Reserch in Plant Pathology for the Ph.D. Degree. (Var.) I, II, S. Work is offered in general plant pathology, plant virology, plant nematology, disease physiology and epidemiology. Pr.: Sufficient background to conduct the line of research undertaken. PLPTH-999-4-0404

College of Architecture and Design

BARNES, ALTON A., Prof. of Landscape Architecture and Planning (1967). BLA 1965, Univ. of Ga.; MLA 1969, Univ. of Ill. Registered Landscape Architect. (GF)

BASSLER, BRUCE, Instr. of Architecture (1981). BArch 1972, Iowa St. Univ.; MArch 1975, Texas A & M. Registered Architect.

BERKEBILE, ROBERT, Adjunct Assoc. Prof. of Architecture (1978). B.Arch. 1959, Univ. of Kan.; Registered Architect.

BROOKS, KENNETH R., Assoc. Prof. of Landscape Architecture (1982). BS 1974, Colo. St. Univ.; MLA 1977, Utah St. Registered Landscape Architect. (GF)

BROWN, DAVID, Asst. Instr. of Interior Architecture (1984).

BRYANT, DALE A., Assoc. Prof. of Architecture (1977). BArch 1968, Univ. of Wash.; MArch 1969, Univ. of Mich. Registered Architect. (GF)

BULLOCK, ROBERT A., Asst. Prof. of Pre-Design Professions (1982). BFA 1970, MFA 1975, Mich. St. Univ.

BURNHAM, ROBERT, Assoc. Prof. of Architecture (1976). BArch 1966, Carnegie Inst. of Tech.; MArch 1970, Univ. of Calif., Berkeley. Registered Architect.

CARTWRIGHT, VIRGINIA, Asst. Prof. of Pre-Design Professions (1983). MArch 1981, Univ. of Ore.; AB 1975 UC Berkeley.

CHANG, AMOS I.T., Prof. of Architecture (1966). BS Civil Engg. 1939, National Chung King Univ.; MFA in Arch. 1949, PhD in Arch. 1951, Princeton Univ. Registered Architect. (GF)

CHELZ, ANTHONY W., Assoc. Prof. of Pre-Design Professions (1975). B.Art.Ed. 1966, Sch. Art Inst. Chicago; MFA 1970, Syracuse Univ.

CHRISTENSEN, KEITH H., Assoc. Prof. of Architecture (1966). BArch 1950, Univ. of Neb.; MArch 1957, Univ. of Mich.

CLEMENT, LAURENCE A., Instr. of Pre-Design Professions (1981). BS 1978, BLA 1980, SUNY.

COATES, GARY J., Assoc. Prof. of Architecture (1977). BED 1969, MArch 1971, N.C. St. Univ. (GF)

DAY, DENNIS J., Prof. of Landscape Architecture (1966). BSLA 1964, Mich. St. Univ.; MLA 1966, Univ. of Mich. Registered Landscape Architect. (GF)

DEINES, VERNON PHILLIP, Prof. of Planning (1957); Head, Department of Regional and Community Planning (1969); Dir. of the Center for Community and Regional Planning (1966). BS 1952, MRP 1961, Kan. St. Univ.; PhD 1977 Univ. of Pittsburgh. Registered Professional Engineer. Certified Planner. (GF)

DeVILBISS, EDWARD A., Assoc. Prof. of Architecture (1975). BArch Eng. 1953, Univ. of Colo. Registered Architect.

DIETRICH, DONALD A., Asst. Instr. of Regional and Community Planning (1984). BA 1960, Kan. St. Univ.

DUBOIS, JAMES H., Asst. Instr. of Pre-Design Professions (1983). BA 1978, Kan. St. Univ.

DURGAN, JACK CLYDE, Prof. of Interior Architecture (1954); Head, Department of Interior Architecture (1969). BArch 1951, Okla. St. Univ.; MS 1957, Kan. St. Univ. Registered Architect. (GF)

EALY, ROBERT P., Prof. of Landscape Architecture Emeritus (1969). BS 1941, Okla. St. Univ.; MS 1946, Kan. St. Univ.; PhD 1955, La. St. Univ. Registered Landscape Architect. (GF)

ERNST, F. GENE, Prof. of Architecture and Planning (1967). BArch 1953, Kan. St. Univ.; MArch (Urban Design) 1971, Univ. of Wash. Registered Architect. (GF)

EWANOW, LYNN, Asst. Prof. of Pre-Design Professions (1979). BA (psych.), BA (art) 1975, Keuka Col.; MLA 1979, SUNY, Col. of Environmental Science and Forestry.

FINDLEY, RICHARD J., Asst. Prof. of Architecture (1982). BSAS 1975, Univ. of Neb.; MArch. 1978, Harvard Univ. Registered Architect. (GF)

FISCHER, EMIL C., Prof. and Dean Emeritus (1955). AB 1929, Columbia Col.; BS in Arch. 1932, MS in Arch. 1933, Columbia Univ.; Registered Architect. (GF)

FOERSTER, BERND, Prof. of Pre-Design Professions (1971). BS in Arch. 1954, Univ. of Cincinnati; MArch 1957, Rensselaer Polytechnic Inst. (GF)

FORSYTH, RICHARD H., Prof. of Landscape Architecture; Asst. Dean, College of Architecture and Design (1979). BSLA 1967, Mich. St. Univ.; MLA 1969, Harvard Univ. Registered Landscape Architect. (GF)

GARRETT-JONES, SARAH L., Instr. of Pre-Design Professions (1982). BSED 1976, Auburn Univ.

GOLTRY, DONNA, Instr. of Regional and Community Planning (1984). MA 1974, Harvard Univ.

HABIGER, ROBERT, Instr. of Interior Architecture (1983). BArch 1971, Kan. St. Univ.

HAR-GIL, GIL, Asst. Prof. of Architecture (1983). MLA 1983, Cornell Univ.; BFA 1979, Bezalel-Jerusalem.

HAYCOCK, GARY E., Assoc. Prof. of Pre-Design Professions (1976). BFA 1970, Pratt Inst.; MArch 1972, Univ. of Ore.

HEINTZELMAN, JOHN CRANSTON, Prof. of Architecture Emeritus (1947); Assoc. Institute for Environmental Research. BArch 1938, Mass. Inst. of Tech.; MArch 1941, Columbia Univ. Registered Architect. (GF)

HUSSEINI, FAYEZ, Asst. Prof. of Pre-Design Professions (1980). BArch 1971, Beirut Arab Univ.; MArch 1979, Kan. St. Univ.; MFA 1980, Kan. St. Univ.

JACKSON, NEIL, Asst. Prof. of Architecture (1983). MA 1977, Univ. of London; PhD 1982, Polytechnic of Southbank. (GF)

JAHNKE, WILLIAM R., Prof. of Architecture (1968); Asst. Dean, College of Architecture and Design (1970). BSME 1948, Duke Univ. Registered Professional Engineer. (GF)

JENSEN, CARSTEN, Asst. Prof. of Architecture (1983). MArch 1979, Univ. of Penn.; BArch 1975, Univ. of British Colombia; BArts 1969, Univ. of Western Ontario.

JONES, JAMES S., Asst. Prof. of Pre-Design Professions and Head of Department (1982). BBAdm 1965, Univ. of Puget Sound; MArch. 1971, Univ. of Wash. Registered Architect.

KEITHLEY, CLAUDE A., Assoc. Prof. of Planning (1970). BArch 1965, MRCP 1973, MArch 1974, Kan. St. Univ. Certified Planner. (GF)

KELLER, JOHN W., Prof. of Planning (1972). BA 1967, St. Benedict's; MA 1968, Kan. St. Univ.; MS 1971, PhD 1974, Rutgers Univ. Certified Planner. (GF)

KOEPKE, MARGUERITE L., Asst. Prof. of Landscape Architecture (1976). BSLA 1972, Iowa St. Univ.; MLA 1980, Kan. St. Univ. Registered Landscape Architect.

KREMER, EUGENE R., Prof. of Architecture (1973); Head, Department of Architecture (1974). BArch 1960, Rensselaer Polytechnic Inst.; MArch 1967, Univ. of Calif. at Berkeley. Registered Architect. (GF)

KRIDER, ALDEN, Prof. of Pre-Design Professions Emeritus (1949). BS in Arch. 1933, MS 1955, Kan. St. Univ. Registered Architect. (GF)

LAW, DENNIS L., Assoc. Prof. of Landscape Architecture (1974). BS 1967, Texas Tech Univ.; MLA 1976, Kan. St. Univ. Registered Landscape Architect. (GF)

LIN, MIKE W., Assoc. Prof. of Landscape Architecture (1975). BS in Arch. 1965, Taipei Inst. of Tech.; MSLA 1972, Univ. of Wis. Registered Landscape Architect. (GF)

McDONALD, C. RICHARD, Assoc. Prof. of Pre-Design Professions (1974). BS 1960, MArch 1979, Kan. St. Univ. Registered Professional Engineer.

McGRAW, EUGENE THOMAS, Prof. of Interior Architecture and Planning (1958). BArch 1957, Okla. St. Univ.; MRP 1963, Kan. St. Univ. (GF)

McMILLAN, BRUCE E., Asst. Prof. of Pre-Design Professions (1981). BArch 1973, MArch 1981, Kan. St. Univ.

MILLER, WILLIAM C., Assoc. Prof. of Pre-Design Professions (1977). BArch 1968, Univ. Ore.; MArch 1970, Univ. Ill. Registered Architect. (GF)

MURPHY, STEPHEN M., Asst. Prof. of Interior Architecture (1968). BS 1968, Kan. St. Univ.; MEd 1974, Univ. of Mo.

MUSIAK, THOMAS A., Prof. of Landscape Architecture (1979); Head, Department of Landscape Architecture (1979). BS 1961, BLA 1965, MLA 1968, Univ. of Mass. Registered Landscape Architect. (GF)

NORRIS-BAKER, CAROLYN, Asst. Prof. of Architecture (1982). BA 1971, BArch 1972, Rice Univ.; MA 1978, PhD 1980, Univ. of Houston. (GF)

PAGE, ROBERT L., Assoc. Prof. of Landscape Architecture (1971). BSLA 1963, Kan. St. Univ.; MLA 1965, Harvard Univ. Registered Landscape Architect. (GF)

PAVLIDES, ELEFTHERIOS, Asst. Prof. of Pre-Design Professions (1982). BA 1971, Brandeis Univ.; MArch 1974, Yale Univ. Registered Architect.

PAYNE, IFAN, Assoc. Prof. of Pre-Design Professions (1976). BArch 1966, Univ. of Wales; PhD 1969, Univ. of London. (GF)

POHLMAN, RICHARD W., Visiting Asst. Prof. of Architecture (1980). BArch 1970, Carnegie-Mellon Univ.; Registered Architect.

PRETZER, CAROLYN A., Director of Audio-Visual Aids, Collection, College of Architecture and Design (1983). BA 1954, Kan. St. Univ.

RASSMAN, NEAL, Asst. Prof. of Landscape Architecture (1982). BA 1971, Washington and Lee; MLA 1977, Texas A & M. Registered Landscape Architect.

QUINLAN, LEON REED, Prof. of Landscape Architecture Emeritus; Ornamental Horticulturist and Landscape Architect, Agr. Exp. Sta. (1927). BS 1921, Colo. St. Univ.; MLA 1925, Harvard Univ. (GF)

SANNER, ALBERT E., Assoc. Prof. of Architecture (1963). BSArch 1948, BSArch Engg. 1950, Univ. of Ill.; MArch 1966, Univ. of Neb. Registered Architect. (GF)

SCHARIG, TERRY D., Instr. of Interior Architecture (1983). BIA 1980, Kan. St. Univ.

SEAMON, DAVID R., Asst. Prof. of Architecture (1983). BA 1970, Albany St. Univ.; MA 1974, PhD 1977, Clark Univ. (GF)

SEIBOLD, LLEWELLYN D., Asst. Prof. of Architecture (1983). BS 1977, Univ. of Neb.; MArch 1981, Univ. of Ore.

SELFRIDGE, O. JOHN, Assoc. Prof. of Planning (1969). BA 1959, Univ. of Kan.; MCP 1964, Yale Univ. (GF)

SLACK, EARL REX, Assoc. Prof. of Architecture (1965). BArch 1952, Univ. of Okla. Registered Architect.

SNEAD, BRUCE C., Adjunct Instr. of Architecture (1976). BArch 1974, Calif. Polytech, San Luis Obispo.

STARNES, TOMMY, Instr. of Regional and Community Planning (1984). MA 1972, Kan. St. Univ.

STEINBRUECK, LINDA D., Asst. Instr. of Pre-Design Professions (1983). BLA 1981, Kan. St. Univ.

STITH, GARY W., Adjunct Asst. Prof. of Regional & Community Planning (1978). BA 1971, Okla. St. Univ.; MCP, MA 1973, Ohio St. Univ., Certified Planner.

STOTESBURY, SIDNEY D., Assoc. Prof. of Architecture (1972). BS 1957, Fla. St. Univ.; MA 1969, PhD 1975, Univ. of Calif. at Berkeley. (GF)

SULLIVAN, RONALD W., Asst. Prof. of Landscape Architecture (1977). BSLA 1967, Iowa St. Univ.; MS 1976 Univ. of Tex. (GF)

THOMPSON, GEORGE H., Visiting Asst. Prof. of Pre-Design Professions (1980). BS 1964, Ohio St. Univ.; MA 1979, MFA 1980, Kan. St. Univ.

TROYER, ROD, Instr. of Interior Architecture (1983). BArch 1971, Kan. St. Univ.

UL KARIN, MUHAMMAD A., Asst. Instr. of Regional and Community Planning (1984). BA 1968, West Pakistan Univ.

VANDEVENTER, W. HAROLD, Instr. of Architecture (1983). BArch 1976, MArch 1983, Kan. St. Univ.

WALTER, DOUGLAS P., Adjunct Instr. (1981). BArch 1979, Kan. St. Univ.

WASAMA, DOUGLAS R., Visiting Asst. Prof. (1979). BArch 1975, Univ. of Mich. Registered Architect.

WATTS, CAROL, Instr. of Pre-Design Professions (1983). BA 1971, Mount Holyoke; MArch 1975, Univ. of Wash.

WATTS, DONALD, Assoc. Prof. of Pre-Design Professions (1983). BArch 1970, Univ. of Neb.; MArch 1971, Univ. of Calif.-Berkeley. (GF)

WEISENBURGER, RAY B., Prof. of Planning (1964). BArch 1959, Univ. of Ill.; MRP 1971, Cornell Univ. Registered Architect. Registered Landscape Architect. (GF)

WENDT, EUGENE G., Assoc. Prof. of Pre-Design Professions (1962). BArch 1959, MArch 1970, Kan. St. Univ. Registered Architect.

WILSON, GWEN OWENS, Asst. Prof. of Pre-Design Professions (1982). BA 1959, Univ. of Okla.; BArch 1972, Howard Univ.; MS 1980, PhD 1982, Univ. of Tenn.

WINDLEY, PAUL G., Prof. of Architecture (1972). BS 1967, Idaho St. Univ; BArch 1969, Univ. of Colo.; MArch 1970, DArch 1972, Univ. of Mich. (GF)

WINSLOW, WILLIAM P. III, Asst. Prof. of Landscape Architecture (1982). BLA 1980, Kan. St. Univ.; MLA 1982, Univ. of Mich. Registered Landscape Architect.

WINTEROWD, LINDA D., Asst. Instr. of Pre-Design Professions (1983). BLA 1981, Kan. St. Univ.

YAGER, GREGORY A., Asst. Prof. of Pre-Design Professions (1981). BArch 1977, Kan. St. Univ.; MArch 1981, Univ. of Minn.

Architecture and Design

Bernd Foerster, dean
Richard H. Forsyth, assistant dean
William R. Jahnke, assistant dean

212 Seaton Hall
532-5950

The College of Architecture and Design offers opportunities for professional study in architecture, interior architecture, landscape architecture, and regional and community planning.

The College of Architecture and Design consists of five academic departments: pre- design professions, architecture, interior architecture, landscape architecture, and regional and community planning.

The curriculum in architecture is accredited by the National Architectural Accrediting Board (NAAB). The interior architecture curriculum is accredited by the Foundation for Interior Design Education and Research (FIDER). The landscape architecture curricula are accredited by the Landscape Architectural Accreditation Board (LAAB). The planning curriculum is recognized by the American Planning Association (APA) in cooperation with the Association of Collegiate Schools of Planning (ACSP).

Bachelor's degrees are offered in architecture, interior architecture, and landscape architecture. Graduate degrees are offered in architecture, landscape architecture and regional and community planning.

General Requirements

Electives

Curricula in the college indicate two types of electives: those listed as free electives may be chosen from any course offered in the University that is open to the student; those electives listed with a specific designation must be chosen from those courses in the indicated field that are open to the student. Four hours of electives may be taken in basic military science. Additional information concerning acceptable electives is available at the dean's office or departmental offices.

Student projects

All programs within the College of Architecture and Design involve extensive project work. Students are advised to budget sufficient funds to cover the cost of materials and supplies, many of which are expendable. Material costs will be higher than those published for non-studio curricula.

Student projects, assignments, presentations, and models may be retained by the various departments. Students are advised to assemble photographic files of their work for their portfolios.

Transfer students

Students transferring from accredited institutions are able to obtain credit for course work in general studies subjects. In addition to general studies courses, transfer credit for professional courses, equivalent to those offered by the College of Architecture and Design, will be accepted if they are earned in environmental design programs accredited by NAAB, FIDER, or LAAB. Students who have questions concerning the transfer of specific courses should contact the dean's office.

Graduate programs

The College of Architecture and Design offers graduate study leading to the Master of Architecture, Master of Landscape Architecture, or Master of Regional and Community Planning degrees. Students and faculty from each of these degree programs work collaboratively in the historic preservation and in the community/urban design specialization areas. Additional information on the graduate programs is included under Graduate School in this catalog.

Options

Design Discovery Program

The Design Discovery Program is an intensive design experience for students who are curious about the environmental design fields of architecture, interior architecture, landscape architecture, or regional and community planning. The program is offered in early summer for high school, community college, and other students not currently enrolled in the College of Architecture and Design.

Participants are offered a general understanding of the challenge and rewards of a career in environmental design through direct interaction with professionals.

The program is structured to help individual students discover their interests and abilities through a series of design exercises. Students who find the challenge of environmental design satisfying are given assistance in planning the remainder of their present curricula and future courses of study.

Students usually live on the University campus while participating in the program and benefit from the opportunity to sample college life and meet others who have similar interests and questions about their careers.

Participants in the Design Discovery Program may, if they wish, receive University credit for completing the program.

Honors program

Honors courses in the Pre- Design Professions Department are for students who wish to be challenged beyond the requirements of regular classes. Students in these seminars deal with selected issues of environmental design.

Summer School

Some University courses may be taken during the summer session. Detailed information on specific courses is contained in the Summer School Bulletin, which may be obtained from the Director of Admissions, Anderson Hall, Manhattan, Kansas 66506. It is available in early spring.

Concurrent degree programs

The nature of the environmental design professions makes concurrent study toward a degree in a variety of other fields an attractive and logical decision for some students. Early development of such academic plans will allow the student a large number of semesters to coordinate courses and to plan enrollments in order to assure completion of all degree requirements for each curriculum in which a degree is sought. Interested students should consult the assistant deans.

Secondary majors

Certain departmental courses have been approved for credit toward the secondary major in Gerontology, International Studies, and Women's Studies. A listing of the approved courses may be found earlier in this catalog.

Pre- Design Professions

James S. Jones, head of department

Professors Barnes* and Foerster;* Associate Professors Brooks,* Chelz, Haycock, McDonald, Payne,* D. Watts,* and Wendt; Assistant Professors Bullock, Ewanow, Har-Gil, Husseini, J. Jones, McMillan, Pavlides, Rassman, Seamon,* Thompson, Wilson, and Yager; Instructors Clement, S. Jones, and C. Watts; Emeriti: Professors Ealy, Fischer, and Krider.

The pre- design professions program includes the first two years of education in the College of Architecture and Design. The program provides a balance between a liberal and an environmental design education. Students are introduced to knowledge, concerns, attitudes, methods, and skills common to the environmental design professions. The program is intended to help students make informed career choices within, and sometimes outside of fields taught in the College of Architecture and Design. The department also offers interdisciplinary undergraduate and graduate courses.

The programs in architecture, interior architecture, and landscape architecture are five years in duration, including the common first two years in the of Pre- Design Professions Department. Admission to the degree-granting departments (final three years) requires successful completion of the pre-design professions curriculum and is determined every spring by the faculty in the respective departments. Students are required to submit a portfolio of their graphic and design project work. In addition, students complete a test designed to show their proficiency in written communication about environmental matters and an understanding of fundamental principles of mathematics. Selection criteria include evidence of motivation, aptitude, and scholarship. There are no admission quotas; each application is considered on its own merits.

Eligible transfer students take the accelerated studios in environmental design, which enable them to complete the program requirements in one year.

All students entering the College of Architecture and Design must enroll in the Pre- Design Professions Department.

Pre- Design Professions Program—100 PDP

First year

First semester		**Sem. hrs.**
PDP 230	Environmental Design Studio I	4
PDP 220	Theory of Environmental Design I	2
PDP 221	Theory of Environmental Design Honors I*	1
ENGL 100	English Composition I	3
ART 195	Survey of Art History I	3
	or	
HIST 101	Western Civilization: Rise of Europe	3
MATH 201	Elementary Applied Mathematics	3
		15/16

Second semester		
PDP 231	Environmental Design Studio II	4
PDP 222	Theory of Environmental Design II	2
PDP 223	Theory of Environmental Design Honors II*	1
ENGL 120	English Composition II	3
ART 196	Survey of Art History II	3
	or	
HIST 102	Western Civilization: Modern Era	3
PHYS 115	Descriptive Physics	4
SPCH 105	Oral Communication I	2
		18/19

Second year

Third semester

PDP 232	Environmental Design Studio III	4
PDP 224	Theory of Environmental Design III	2
PDP 225	Theory of Environmental Design Honors III*	1
PDP 290	Technology of Designed Environment	3
PDP 291	Technology of Designed Environment Lab	1
PDP 250	History of the Designed Environment I	3
PE 101	Concepts in Physical Education	1
	Limited elective	3
		17/18

Fourth semester

PDP 233	Environmental Design Studio IV	4
PDP 226	Theory of Environmental Design IV	2
PDP 227	Theory of Environmental Design Honors IV*	1
PDP 292	Concept of Structure	3
PDP 293	Concept of Structure Lab	1
PDP 251	History of the Designed Environment II	3
	Limited elective	3
		16/17

Total for PDP curriculum ..... 66 minimum

*See honors program

After satisfactory completion of the Pre- Design Professions curriculum, students are cligible to apply for admission to the Department of Architecture, the Department of Interior Architecture, or the Department of Landscape Architecture.

Courses in pre- design professions

PDP 205, 206. Design Graphics I, II. (3) I, II. Skill development in graphic communications. Emphasis on systematized methods for representing and communicating three-dimensional form and space. A general course for non-majors. Six hours studio per week.

PDP 205. Design Graphics I. (3) I. PDP-205-1-0201

PDP 206. Design Graphics II. (3) II. Pr.: PDP 205. PDP-206-1-0201

PDP 207, 208. Form, Space, and Order I, II. (3) I, II. A design course devoted to the study of the essential elements of form and space and the principles that control their organization in the designed environment. Three dimensional design problems are used to develop an awareness of human behavior, perception and response associated with the designed environment. A general course for non-majors. Six hours studio per week.

PDP 207. Form, Space, and Order I. (3) I. Pr.: PDP 205, 206. PDP-207-1-0201

PDP 208. Form, Space, and Order II. (3) II. Pr.: PDP 205, 206, 207. PDP-208-1-0201

PDP 212. Studio for Environmental Design and Graphics. (3) I, II, S. Introduction to graphic communication skills and problem-solving processes used by environmental designers. For students not enrolled in the College of Architecture and Design. Six hours studio a week. PDP-212-1-0201

PDP 220. Theory of Environmental Design I. (2). An introduction to the social, cultural, and behavioral factors in environmental design. Two hours lec. a week. PDP-220-0-0201

PDP 221. Theory of Environmental Design Honors I. (1) I. Same as PDP 220, but includes additional seminar sessions requiring reading, writing, and discussion. For honors students. PDP-221-0-0201

PDP 222. Theory of Environmental Design II. (2) II. An introduction to the relationship of the natural environment to the life within it and as a factor in environmental design. Two hours lec. a week. Pr.: PDP 220. PDP-222-0-0201

PDP 223. Theory of Environmental Design Honors II. (1) II. Same as PDP 222, but includes additional seminar sessions requiring reading, writing, and discussion. For honors students. Pr.: PDP 220. PDP-223-0-0201

PDP 224. Theory of Environmental Design III. (2) I. An introduction to elements of design; visual and aesthetic factors relating the designed environment to human need. Two hours lec. a week. Pr.: PDP 222. PDP-224-0-0201

PDP 225. Theory of Environmental Design Honors III. (1) I. Same as PDP 224, but includes additional seminar sessions requiring reading, writing, and discussion. For honors students. Pr.: PDP 222. PDP-225-0-0201

PDP 226. Theory of Environmental Design IV. (2) II. An introduction to the relationship of science and technology to the designed environment. Two hours lec. a week. Pr.: PDP 224. PDP-226-0-0201

PDP 227. Theory of Environmental Design Honors IV. (1) II. Same as PDP 226, but includes additional seminar sessions requiring reading, writing, and discussion. For honors students. Pr.: PDP 224. PDP-227-0-0201

PDP 230, 231, 232, 233. Environmental Design Studio I, II, III, and IV. Studies in a wide range of environmental design problems using varied means of communications as they pertain to architecture, interior architecture, and landscape architecture. Twelve hours studio a week.

PDP 230. Environmental Design Studio I. (4) I. PDP-230-1-0201

PDP 231. Environmental Design Studio II. (4) II. Pr.: PDP 230. PDP-231-2-0201

PDP 232. Environmental Design Studio III. (4) I. Pr.: PDP 231. PDP-232-1-0201

PDP 233. Environmental Design Studio IV. (4) II, S. Pr.: PDP 232. PDP-233-1-0201

PDP 240. Honors Seminar in Environmental Design Studio. (1) I, II. Discussion and additional reading concerning issues arising out of an Environmental Design Studio. For honors students, repeatable for credit. To be taken conc. with an EDS studio. PDP-240-0-0201

PDP 241, 242. Accelerated Environmental Design Studio I, II. Foundation in environmental design with emphasis on design fundamentals and graphic communication skills. Pr.: For transfer students with eight or more credit hours in environmental design, graphics, and/or art studio courses.

PDP 241. Accelerated Environmental Design Studio I. (6). PDP-241-0-0201

PDP 242. Accelerated Environmental Design Studio II. (6). Pr.: PDP-241-0-0201. PDP-242-0-0201

PDP 250 and PDP 251. History of the Designed Environment I and II. A study of the history of the man-made environment and its relationship to the societies that produced it; classic times to present. Three hours lec. a week.

PDP 250. History of the Designed Environment I. (3) I. Pr.: HIST 102 or ART 196. PDP-250-0-0201

PDP 251. History of the Designed Environment II. (3). Pr.: PDP 250. PDP-251-0-0201

PDP 290. Technology of the Designed Environment. (3) I. Criteria for evaluation and selection of materials; the art of joining; introduction to communicating construction information; interrelation of material properties, fabrication-erection methods and design considerations. Introduction to systems of environmental control. Taken conc. with PDP 291. Pr.: MATH 201 and PHYS 115. PDP-290-0-0201

PDP 291. Technology of the Designed Environment Laboratory. (1) I. Laboratory/recitation to supplement and reinforce the material covered in lecture course. Taken conc. with PDP 290. PDP-291-0-0201

PDP 292. The Concept of Structure. (3) II. A descriptive course in structures in the natural and built environment covering concepts and vocabulary. Topics include force, equilibrium, active and reactive forces, stability and strength of materials. Emphasis is on design decisions. Three hours lec. a week. Taken conc. with PDP 293. Pr.: MATH 201 and PHYS 115. PDP-292-0-0201

PDP 293. The Concept of Structure Laboratory. (1) II. Laboratory/recitation to supplement and reinforce the material covered in lecture course. Taken conc. with PDP 292. PDP-293-0-0201

PDP 299. Problems in Basic Design. (Var.) I, II, S. A study of specified problems in elementary environmental design under the guidance of a member of the staff. Pr.: Approval of department head. PDP-299-4-0201

PDP 350. American Architecture and Urbanism, 1800-1970. (3) I. Developments in architectural and urban design which have had a major impact on American culture and the environment from the inception of the Industrial Revolution to the present. Emphasis given to attitudes towards design and to the social and cultural context in which they occurred. Styles and technology will be examined as they related to the aspirations, needs, and resources of each period. Three hours lec. a week. Pr.: PDP 250 and PDP 251. PDP-350-0-0201

PDP 351. Developments in the Built Environment: 1890-1945. (3) I. Examination of developments in design in Europe and the United States. Attention given to diversity of movements throughout the period. Emphasis given to attitudes toward design and to the socio-cultural context in which they occurred. Pr.: PDP 251 or equiv. PDP-351-0-0201

PDP 352. Developments in the Built Environment Since 1945. (3) II. Examination of recent developments in the design of buildings and urban schemes in Europe and the United States. Course will focus on diversity of contemporary directions and influential design attitudes. Three hours lec. a week. Pr.: PDP 251 or equiv. PDP-352-0-0201

PDP 370. Perspective Methodology for Designers. (2) Intersession. Mechanical and freehand perspective drawing methodology as a systematic approach to three-dimensional design. Projects will be directed towards the individual student's area of interest and need. Pr.: PDP 208 and two hours drawing credit. PDP-370-0-0201

PDP 375. The Designed Environment and Human Behavior. (3) I. An introduction to those aspects of human behavior which influence the process of environmental design, including the ways in which people perceive, think about, respond to, and interact in physical settings. Techniques for environmental analysis and design from a behavioral perspective will be applied to architectural, urban, and natural settings. Three hours lecture-seminar a week. PDP-375-0-0201

PDP 380. Visual Thinking. (2) Intersession. An analysis of man's recognition, visualization, and recording of environmental experiences. Experimental exercises in sensory stimulation and response recording. PDP-380-0-0201

PDP 505. Architectural Materials Testing. (2) I, II. Testing of materials commonly used in architecture, interior architecture, and landscape architecture, including steel, wood, concrete, aluminum and plastics. Experimental evaluation of connections used with each material. Data analysis and report writing. One hour lec. and two hours lab per week. Pr.: PDP 292 and junior standing. PDP-505-3-0201

PDP 510. Man and His Surroundings. (3) II, S. Man as builder-modifier; functional and visual analysis of the designed environment; human response; relation to nature; introduction to design approaches; case studies; strategies for problem solving. Three hours illustrated lecture-discussion a week. Not for students in architecture, interior architecture, or landscape architecture. PDP-510-0-0201

PDP 520. Design Graphics Workshop. (1-4) I, II, S. Exposure to principles, techniques, and discipline of the communication modes of design drawing: exercises to illustrate the basic methodologies of perspective, orthographic, and oblique graphic systems for displaying three-dimensional messages of physical design issues and ideas. Pr.: Junior standing/open to non-majors/architecture and design majors by permission of the department head only. PDP-520-0-0201

PDP 560. Accelerated Environmental Design and Graphics. (3) I, II, S. An accelerated study of design principles, elements, and methods facilitating the ability of students to translate ideas and concepts from their academic areas into two and three dimensional representation. Primarily for students from non-design baccalaureate programs entering graduate studies in Architecture, Landscape Architecture, or Regional and Community Planning. Six hours studio a week. PDP-560-1-0202

PDP 650. Preservation Documentation. (3) I, II. Investigation of existing buildings and their settings; documenting design qualities, history, materials, systems, construction techniques, landscape and physical and functional changes over time, utilizing Historic American Building Survey Standards. Pr.: Senior standing and proficiency in drafting. PDP-650-0-0201.

PDP 651. Preservation Principles and Methods. (3) I. Examination of theoretical and practical aspects of the preservation process of the built environment in the United States. Topics covered include: historical background, legislation, roles of preservation organizations, funding techniques, ramifications of historic districts and zoning, approaches to restoration and rehabilitation, scope of objectives. Three hours seminar a week. Pr.: Senior standing. PDP-651-0-0201

PDP 655. History of the Built Environment in the Midwest. (3) II. Examination of physical growth and development in the midwest-plains region, concentrating on second half of the nineteenth and early twentieth centuries. Investigation of both settlement patterns and basic building forms and types within a broad socio-cultural context. Seminar offered alternate years. Pr.: Senior standing. PDP-655-0-0201 (For graduate and undergraduate credit)

PDP 699. Problems in Environmental Design. (Var.) I, II, S. A study of specific environmental design problems under the direction of a member(s) of the departmental staff. Pr.: Junior standing. PDP-699-4-0201

Architecture

Eugene Kremer,* head of department

Professors Chang,* Ernst,* Foerster,* Jahnke,* Kremer,* Weisenburger,* and Windley;* Associate Professors Bryant,* Burnham, Christensen,* Coates,* DeVilbiss, Miller,* Sanner,* Slack, and Stotesbury;* Assistant Professors Bassler, Cartwright, Findley,* Jackson,* Jensen, Norris-Baker,* Pohlman, Seamon,* and Seibold; Instructor Vandeventer; Emeriti: Professors Fischer, Heintzelman, and Krider; Adjunct Associate Professor Berkebile; Adjunct Assistant Professors Snead and Walter.

Undergraduate study

The professional program leading to the Bachelor of Architecture degree consists of a three-year course of study following the two-year pre- design professions program.

The Kansas State University Bachelor of Architecture degree is accredited by the National Architectural Accrediting Board. This professional degree and three years' practical experience under the supervision of a registered architect qualify one to take the National Council of Architectural Registration Board's Professional Architectural Licensing Exam.

One of the few certainties the future holds is change. It is for this reason that the professional program in architecture emphasizes principles and problem-solving processes rather than focusing on mastery of the myriad technical details of the profession which are rapidly supplanted by new social, political, and technological developments. The design studio experience forms the core of the program: here concepts earlier introduced through courses in human needs, history, construction technology, structures, and environmental control systems are synthesized. An elective, 30-week internship program, which may include work-study experience in professional offices, industry, or governmental agencies, affords advanced students an opportunity to work in a professional context and to apply the problem-solving approaches they have developed.

Graduate study

Emphasis areas in the Master of Architecture program (environment/behavior, historic preservation, and urban/community design) accommodate students with certain four-year baccalaureate degrees, or graduates of five- or six-year programs in architecture, interior architecture, or landscape architecture. Applicants are considered upon the merits of their academic backgrounds and proposed programs of study.

Architecture program—115 AR

Total hours required for graduation—167

For the curriculum requirements for the first four semesters, see predesign professions earlier in this section.

		Sem. hrs.
Fifth semester		
ARCH 401	Architectural Design Studio I	5
ARCH 413	Environmental Systems in Architecture I	4
ARCH 450	Structural Systems in Architecture I	3
	Electives*	6
		18
Sixth semester		
ARCH 402	Architectural Design Studio II	5
ARCH 514	Environmental Systems in Architecture II	3
ARCH 451	Structural Systems in Architecture II	3
ARCH 433	Building Construction Systems in Architecture I	3
	Electives*	3
		17
Seventh semester		
ARCH 603	Architectural Design Studio III	5
ARCH 515	Environmental Systems in Architecture III	3
ARCH 434	Building Construction Systems in Architecture II	3
PLAN 315	Introduction to Planning	3
	Electives*	3
		17
Eighth semester		
ARCH 604	Architectural Design Studio IV	5
	Electives*	10
		15
	or	
ARCH 504	Architectural Internship	15
		15
Ninth semester		
ARCH 801	Architectural Design Studio V	5
ARCH 800	Architectural Design Programming	2
ARCH 756	Topics Professional Practice I	2
	Electives*	8
		17
Tenth semester		
ARCH 802	Architectural Design Studio VI	5
ARCH 757	Topics Professional Practice II	2
	Electives*	10
		17

*Students must successfully complete at least 21 professional support elective credits and as many as 19 free elective credits.

Courses in architecture
Undergraduate credit

ARCH 301. Appreciation of Architecture. (3) I, II, S. An analysis of the evolution of architectural styles to determine the relation of architectural expression to the needs of society. Three hours rec. a week. May not be taken for credit by students enrolled in the architecture, landscape architecture, and interior architecture curricula. ARCH-301-0-0202

ARCH 401 and ARCH 402. Architectural Design Studio I and II. Relation of structures to their environment; client and community restraints; development of building programs; synthesis of functional, technical, and aesthetic considerations in the design of structures for human use. Fifteen hours studio a week.

ARCH 401. Architectural Design Studio I. (5) I. Pr.: Admission to the professional program and PDP 261. ARCH-401-1-0202

ARCH 402. Architectural Design Studio II. (5) II, S. Pr.: ARCH 401. ARCH-402-1-0202

ARCH 413. Environmental Systems in Architecture I. (4) I, II. Discussion of the influences of environmental technology upon design concepts. Three hours lec. and one hour rec. a week. Pr.: Admission to a professional program in the college. ARCH-413-0-0202

ARCH 433 and ARCH 434. Building Construction Systems in Architecture I and II. (3). These courses deal with development of decision-making skills related to building construction systems in architecture; and with preparation of written and graphic communications which illustrate and direct the construction process. Methodologies for evaluating, selecting, manipulating, and interfacing building systems and materials are introduced with reference to changing technological, regulatory, and economic environments and their impact on building design. Materials properties, sequence of assembly, and studies of the construction process are reviewed. Two hours lec. and five and one-half hours of studio a week.

ARCH 433. Building Construction Systems in Architecture I. (3) II. Pr.: PDP 290, PDP 291, and admission to a professional program in the college. ARCH-433-1-0202

ARCH 434. Building Construction Systems in Architecture II. (3) I. Pr.: ARCH 433. ARCH-434-1-0202

ARCH 450. Structural Systems in Architecture I. (3) I. Broad approach to the design of building structures as whole systems. Basic issues and principles are identified by analysis of overall structural behavior in building forms. Simplified strategies and techniques are applied for analyzing and manipulating basic quantitative properties of major subsystems in response to anticipated loadings. Two hours lec. and three hours lab a week. Pr.: Admission to a professional program in the college and PDP 290, PDP 291. ARCH-450-1-0202

ARCH 451. Structural Systems in Architecture II. (3) II. Continuation of the study of major sub-systems begun in ARCH 450, and introduction of techniques for the design of key sub-system components. Issues associated with analysis and design of special building structures are studied. Treatment of basic constructive and economic aspects of design and selection of structural systems. Two hours lec. and three hours lab a week. Pr.: ARCH 450. ARCH-451-1-0202

ARCH 475. Problems in Architectural Presentation. (Var.) I, II, S. Study of various methods of graphically representing architectural problems to develop professional office techniques. Pr.: Third-year standing and approval of instructor. ARCH-475-3-0202

ARCH 504. Architectural Internship. (15) I, II. Thirty weeks off-campus work-study in the office of an architect, environmental designer, or allied organization; field experience and office production. This course is not for graduate credit. Pr.: ARCH 434, ARCH 603, and approval of the department head. ARCH-504-2-0202

Undergraduate and graduate credit in minor field

ARCH 514 and ARCH 515. Environmental Systems in Architecture II and III. (3). Criteria for selection and application of natural and mechanical environmental control systems in architecture. Focus on the integration of thermal, illumination, sanitary, movement, and acoustical systems with the building fabric and the natural environment. Contemporary and developing approaches are explored. Three hours lec. a week.

ARCH 514. Environmental Systems in Architecture II. (3) II. Pr.: ARCH 413. ARCH-514-0-0202

ARCH 515. Environmental Systems in Architecture III. (3) I. Pr.: ARCH 413. ARCH-515-0-0202

ARCH 566. Problems in Architectural Design. (Var.) S. Study of specific design problems under the direct supervision of a member of the architectural faculty. Pr.: Approval of instructor. ARCH-566-3-0202

ARCH 601. Topics in History of the Designed Environment. (3) I, II. For the concentrated study of a particular period or subject in the history of the man-made environment. Seminars, readings, discussions, and projects. May be taken by majors in the College of Architecture and Design for a total of twelve hours credit. Three hours rec. a week. Pr.: PDP 261 or approval of instructor. ARCH-601-0-0202

ARCH 603. Architectural Design Studio III. (5) I, II. Problem analysis and program development, generation of alternate solutions, selection and refinement of the building design. Fifteen hours studio a week. Pr.: ARCH 402. ARCH-603-1-0202

ARCH 604. Architectural Design Studio IV. (5) I, II. Continuation of ARCH 603. Increased complexity of function and space definition systems. Relating environmental technology to total design. Fifteen hours studio a week. Pr.: ARCH 603. ARCH-604-1-0202

ARCH 655. Foreign Seminar. (Var.) I, II, S. Group observation of design examples (ancient or modern) of a selected region, conducted in situ, to study significant aspects of environment, culture, and technology as relating to design solutions. ARCH-655-2-0202

Undergraduate and graduate credit

ARCH 621. Economics of Preservation. Detailed examination of economic issues in preservation of the built environment with emphasis on understanding costing techniques, public and private financing methods, and the economic benefits of preservation. Three hours a week. Pr.: ECON 110 and fourth year standing. ARCH-621-0-0202

ARCH 660. Architectural Ornament. (3) I, II. Design and production of architectural ornamental elements. Study of historic elements. Study of historic and contemporary examples. One hour lec. and six hours studio a week. May be repeated once for credit. Pr.: Third year standing in the College of Architecture and Design. ARCH-660-1-0202

ARCH 703. Environmental Aesthetics. (3) I, II. Problems involving aesthetics in areas related to student's major field. Three hours a week. Pr.: Senior standing in architecture, landscape architecture, interior architecture, architectural structures, urban design. ARCH-703-0-0202

ARCH 704. Environmental Seminar. (Var.) I, II. Environmental systems related to human perception, reactions, and behavior. Pr.: Senior standing. ARCH-704-3-0202

ARCH 710. Topics in Architectural Design Methods. (3) I, II. Intensive review of selected design methodologies, including systematic and computer-based approaches to problem definition and project design; emphasis upon the comparative evaluation of problem-solving strategies within the architectural design process. Pr.: Advanced undergraduate or graduate standing. ARCH-710-0-0202

ARCH 715. Theory of Design. (3) I, II. Analysis of theories and philosophies in the design professions, including those in related societal and technological fields. Pr.: ARCH 603 or IAR 603 or LAR 641. ARCH-715-0-0202

ARCH 720. Seminar in Environmental Behavior. (3) I, II. An introductory course investigating the relationship between human behavior and the design of the physical environment, identifying those basic psychological and social concepts which influence and are influenced by the man-built environment. Three hours lecture-seminar a week. Pr.: Senior standing or permission of instructor. ARCH-720-0-0202

ARCH 725. Architectural Research Methods. (3) I, II. An introductory course surveying the basic philosophies and methodologies of science and research as they apply to the field of architecture. Special emphasis will be placed on those methods appropriate for investigating human response to the man-built environment. Three hours lecture-seminar a week. Pr.: Senior standing. ARCH-725-0-0202

ARCH 730. Environmental Design and the Aging Process. (3) I, II. An exploration of the aging process related to those factors in the architecturally designed environment that hinder and facilitate successful adaptation by the aging individual. Three hours lecture-seminar a week. Pr.: Senior or graduate standing. ARCH-730-0-0202

ARCH 735. Topics in Building Construction Systems in Architecture. (1-4) I, II. Advanced study of the relationship of conceptual and/or technological factors of building construction to architecture. Pr.: ARCH 434 or graduate standing and consent of instructor. ARCH-735-1-0202

ARCH 752. Structural Systems in Architecture III. (Var.) I, II. Study of the relationship of conceptual and/or technological factors of structure to architectural design in more depth, or in a broader context of form determining interactions than that presented in ARCH 450 and ARCH 451. Pr.: ARCH 450, ARCH 451. ARCH-752-varies-0202

ARCH 756 and ARCH 757. Topics in Professional Practice I and II. Studies of conventional and newly developing modes of professional architectural practice. The relationship of the architect and the profession to the user, client, building industry, and society. Two hours lec. a week.

ARCH 756. Topics I. (2) I, II. Pr.: Fourth year standing. ARCH-756-0-0202

ARCH 757. Topics II. (2) I, II. Pr.: Fourth year standing. ARCH-757-0-0202

ARCH 765. Problems in Architecture. (Var.) I, II, S. A study of specific architectural problems under the direction of a member of the department staff. Pr.: Approval of instructor. ARCH-765-3-0202

ARCH 800. Architectural Design Programming. (2) I, II. Independent development of the program for ARCH 802, Architectural Design VI, under the direction of a faculty committee. Must be taken in residence and may be conc. with ARCH 604 or ARCH 801. Pr.: ARCH 603 and approval of the faculty committee. ARCH-800-3-0202

ARCH 801. Architectural Design Studio V. (5) I, II. Integration of the physiological, psychological, and sociological parameters in the design of man's environmental needs. Analysis, programming, and design of urban problems and/or large-scale site planning problems, increased complexity of function and space definition systems. Relating environmental technology to total design. Fifteen hours studio a week. Pr.: ARCH 604. ARCH-801-1-0202

ARCH 802. Architectural Design Studio VI. (5) I, II. Development of the student's project programmed in ARCH 802, under the direction of a faculty committee. Project must demonstrate a high level of achievement in: systematic and comprehensive thinking, application of resources, and communication of the total process. Fifteen hours studio a week. Pr.: ARCH 800, ARCH 801. ARCH-802-1-0202

Graduate credit only

ARCH 746. Urban Design Studio I. (4) I. An interdisciplinary design studio involving large scale design; projects with extensive time implementation sequence, responses to socio-economic, cultural, environmental and technical needs, and implementation strategies. Design methods are applied to selected urban areas of the midwest. Pr.: PLAN 315 or equiv. and conc. enrollment in PLAN 749. ARCH-746-1-0202

ARCH 810. Research in Architecture. (Var.) I, II, S. Study in architecture and related fields leading to thesis or non-thesis project. Pr.: Approval of instructor. ARCH-810-4-0202

ARCH 830. Advanced Architectural Design. (Var.) I, II, S. Studies related to a comprehensive program in architecture. Pr.:ARCH 802. ARCH-830-3-0202

ARCH 846. Urban Design Studio II. (4) II. Continuation of ARCH 746. Pr.: ARCH 746 and conc. enrollment in PLAN 845. ARCH-846-1-0202

ARCH 847. Urban Design Field Study. (3) I, II, S. A field investigation of varied large scale institutions, C.B.D., and other mixed use developments. Pr.: PLAN 745 and PLAN 746. ARCH-847-1-0202

Interior Architecture

Jack C. Durgan, head of department

Professors Durgan,* Foerster,* and McGraw;* Assistant Professor Keithley;* Assistant Professor Murphy; Instructors Habiger, Scharig, and Troyer.

Undergraduate study

The Bachelor of Interior Architecture professional program consists of a three-year course of study following the two-year pre- design professions program.

The curriculum in interior architecture is structured for students who plan a professional career in space planning in commercial, institutional, and industrial interior design. After an introduction to basic interior space planning, students undertake studio exercises that include programming and

designing of spaces. Special emphasis is placed on spatial organization, behavior analysis, space component design and construction, the integration of environmental systems, and the preparation of working drawings and contract documents.

An elective 30-week internship program, which may include work-study experience in professional offices or industry, affords advanced students opportunity to work in a professional context and to apply the problem solving approaches they have developed.

Interior architecture program—150 ARI

Total hours required for graduation—167

For the curriculum requirements for the first four semesters, see predesign professions earlier in this section.

		Sem. hrs.
Fifth semester		
IAR 401	Interior Architectural Design Studio I	5
ARCH 413	Environmental Systems in Architecture I	4
IAR 409	Finishing	3
IAR 415	History of Interior Architecture	2
	Free electives	3
		17
Sixth semester		
IAR 402	Interior Architectural Design Studio II	5
ARCH 512	Environmental Systems in Architecture II	3
ARCH 433	Building Construction Systems in Architecture I	3
IAR 420	Theory of Furniture Design	2
	Free electives	4
		17
Seventh semester		
IAR 603	Interior Architectural Design Studio III	5
ARCH 515	Environmental Systems in Architecture III	3
IAR 407	Design Workshop I	3
IAR 820	Advanced Seminar in Interior Architecture	3
	Business elective	3
Eighth semester		
IAR 604	Interior Architectural Design Studio IV	5
IAR 408	Design Workshop II	3
CT 260	Textiles	3
	Art electives	4
	Free electives	2
		17
	or	
IAR 444	Interior Architecture Internship	15
Ninth semester		
IAR 801	Interior Architectural Design Studio V	5
ARCH 434	Building Construction Systems in Architecture II	3
IAR 710	Design Workshop III	4
ARCH 720	Seminar in Environmental Behavior	3
	Free electives	2
		17
Tenth semester		
IAR 802	Interior Architectural Design Studio VI	5
IAR 783	Contemporary Furniture Design	4
IAR 754	Contract Design Practice	2
	Free electives	5
		16

Courses in interior architecture

Undergraduate credit

IAR 406. Problems in Interior Architecture. (Var.) I, II. Study of specific interior architectural problems under direct supervision of a member of the departmental staff. Pr.: Approval of instructor. IAR-406-0-0203

IAR 409. Finishing. (3) II. Methods of finishing various materials in interiors. Six hours lab a week. Pr.: PDP 261. IAR-409-0-0203

IAR 414. General Design Workshop. (3) S. Design, construction, and finishing of contemporary furniture and accessories. Pr.: Open to all students in the University with junior standing. IAR-414-1-0203

IAR 415. History of Interior Architecture. (2) I. History of the design of architectural interiors and their related components. Special emphasis upon the developments of the 20th century. Pr.: Admission to professional program in architecture, interior architecture, or landscape architecture. Two hours lec. a week. IAR-415-0-0203

IAR 420. Theory of Furniture Design. (2) II. Design theory related to analysis, materials, and construction techniques of contemporary furniture. Pr.: Admission to professional program in architecture, interior architecture, or landscape architecture. Two hours lec. a week. IAR-420-0-0203

Undergraduate and graduate credit

IAR 401, 402, 603, 604, 801 and 802. Interior Architectural Design Studio I through VI. Analysis, synthesis, and design execution of various types of interior spaces, integrating such space design determinants as human factors, environmental-technological systems, activity structure, and symbiotic relationships. **Interior Architectural Design Studios I and II are not for graduate credit.**

IAR 401. Interior Architectural Design Studio I. (5) I. Pr.: Admission to professional program and PDP 261. IAR-401-1-0203

IAR 402. Interior Architectural Design Studio II. (5) II. Pr.: IAR 401. IAR-402-1-0203

IAR 444. Interior Architecture Internship. (15) II, S. Thirty weeks off-campus work study in professional offices specializing in interior architecture; field and office experience. Pr.: IAR 603, ARCH 433, and approval by the Internship Coordinator. IAR-444-1-0203

IAR 601. Interior Architecture Seminar. (3) I. Readings and discussion of contemporary thought and movements within the field of interior architecture with special emphasis on the societal factors which produce and affect change. Pr.: LAR 402 or graduate standing. IAR-601-0-0203

IAR 603. Interior Architectural Design Studio III. (5) I. Pr.: IAR 402. IAR-603-1-0203

IAR 604. Interior Architectural Design Studio IV. (5) II. Pr.: IAR 603. IAR-604-1-0203

IAR 407, 408, and 710. Design Workshop I through III. Instruction in the sequence of courses consists of the design, development of shop drawings, construction, and finishing of interior space components. **Design Workshop I and II are not for graduate credit.**

IAR 407. Design Workshop I. (3) I. Pr.: Admission to a professional program and consent of instructor. IAR-407-1-0203

IAR 408. Design Workshop II. (3) II. Pr.: IAR 407. IAR-408-1-0203

IAR 710. Design Workshop III. (4) I. Pr.: IAR 408 or graduate standing. IAR-710-1-0203

IAR 754. Contract Design Practice. (2) II. Evaluation, selection, and specification of interior architectural materials, surfaces, and finishes. Pr.: IAR 604. IAR-754-0-0203

IAR 783. Contemporary Furniture Design. (4) II. Experimentation in the design of spatial component systems, utilizing advanced techniques in construction methods and materials. Pr.: IAR 710 or graduate standing. IAR-783-1-0203

IAR 801. Interior Architectural Design Studio V. (5) I. Pr.: IAR 604. IAR-801-1-0203

IAR 802. Interior Architectural Design Studio VI. (5) II. Pr.: IAR 801. IAR-802-1-0203

IAR 820. Advanced Seminar in Interior Architecture. (Var. 1-3) I, II. Advanced readings and discussions of environmental issues related to the practice of interior architecture. Readings, discussions, reports. Pr.: IAR 802 or equiv. IAR-820-0-0203

Graduate credit

IAR 821. Advanced Interior Architectural Design. (Var. 1-4) I, II. Advanced study of interior space planning and interior component design. Pr.: Professional design degree. IAR-821-0-0203

IAR 830. Problems in Interior Architecture. (Var.) I, II. Study of specific interior architectural problems under direct supervision of the departmental staff. Pr.: Professional Design degree. IAR-830-0-0203

IAR 840. Advanced Design Workshop. (Var. 1-4) I, II. Advanced instruction in the design, construction, and finishing of contemporary furniture and accessories. Pr.: IAR 783 or equiv. IAR-840-1-0203

Landscape Architecture

Thomas A. Musiak, head of department

Professors Barnes,* Day,* Forsyth,* and Musiak;* Associate Professors Brooks,* Law,* Lin,* and Page;* Assistant Professors Ewanow, Koepke, Rassman, Sullivan,* and Winslow; Emeriti: Professors Ealy and Quinlan.

Undergraduate study

The Bachelor of Landscape Architecture professional program consists of a three-year course of study following the two-year pre- design professions program.

The curriculum is designed to prepare students for the field of professional landscape architecture. Special emphasis is placed upon outdoor space organization, land planning, topographical manipulation, landscape planning and construction, and the role of adapted plant materials in the landscape. The study of man's impact upon the environment, both natural and man-made, is emphasized. The Bachelor of Landscape Architecture degree is accredited by the Landscape Architectural Accreditation Board of the American Society of Landscape Architects.

All required courses taught in the Department of Landscape Architecture which are counted toward the degree must be passed with a grade of C or better.

Graduate study

Individual graduate programs in the Master of Landscape Architecture curriculum can accommodate students with bachelor's degrees in many fields of study. Applicants are considered on the merits of their academic backgrounds and proposed programs of study. The Master of Landscape Architecture degree is accredited by the Landscape Architectural Accreditation Board of the American Society of Landscape Architects.

Landscape architecture program—180 LAR

Total hours required for graduation—166

For the curriculum requirements for the first four semesters, see pre-design professions earlier in this section.

		Sem. hrs.
Fifth semester		
LAR 431	Landscape Architectural Design Studio I	4
LAR 436	Landscape Construction I	3
CE 212	Elementary Surveying Engineering*	3
HORT 374	Woody Plant Materials I**	3
	Science elective	3
		16
Sixth semester		
LAR 432	Landscape Architectural Design Studio II	4
LAR 437	Landscape Construction II	3
LAR 204	Landscape Architectural Delineation Techniques	2
HORT 375	Woody Plant Materials II	3
PLAN 315	Introduction to Planning	3
	Art elective	2
		17
Seventh semester		
LAR 641	Landscape Architectural Design Studio III	4
LAR 647	Landscape Construction III	3
LAR 434	Planting Design I	3
LAR 756	Design of Parks & Recreation Areas	3
LAR 433	History & Theory of Landscape Architecture	3
		16
Eighth semester		
LAR 642	Landscape Architectural Design Studio IV	4
LAR 435	Planting Design II	3
CE 718	Photo Interpretation	3
	or	
GEOG 705	Remote Sensing of Environment	2
HORT 508	Landscape Maintenance	3
LAR 501	Landscape Architecture Seminar	2
LAR 744	Community Site Planning	3
		17/18
Ninth semester		
LAR 801	Landscape Architectural Design Studio V	5
LAR 643	Planting Design III	3
LAR 501	Landscape Architecture Seminar	2
LAR 645	Professional Internship***	2
	Business elective	3
	General elective	3
		18
Tenth semester		
LAR 802	Landscape Architectural Design Studio VI	5
LAR 753	Professional Practice	2
	Business elective	3
	Science elective	3
	General elective	3
		16

*Surveying is taught in civil engineering; MATH 150 Plane Trigonometry, or equivalent, is a prerequisite.

**Woody Plant Materials is taught in horticulture and the prerequisite is one of these three courses: horticulture/agronomy or HORT 200 Plant Science; BIOL 210 General Botany; or BIOL 198 Principles of Biology.

***Internship in a professional office is arranged by the student for the summer and credited in the next fall semester.

Courses in landscape architecture
Undergraduate credit

LAR 204. Landscape Architectural Delineation Techniques. (2) I, II. A study of delineation media and techniques that are related to the practice of landscape architecture in professional offices. Four hours studio a week. Pr.: PDP 232 or 241. LAR-204-1-0204

LAR 250. General Landscape Design. (3) I, II. Basic graphic communication skills, design principles, and design vocabulary covering residential and small scale landscape development plans. Two hours lec. and two hours studio a week. A general service course for non-Architecture and Design majors. LAR-250-1-0204

LAR 431 and LAR 432. Landscape Architectural Design Studio I & II. Design of the outdoor environment for human needs and activities; ecological considerations; project program, site selection, analysis, concept, design, communications, specification, construction, planting, and maintenance.

LAR 431. Landscape Architectural Design Studio I. (4) I. Two hours lec. and six hours design studio a week. Pr.: Admission to the Professional Program and PDP 222, 233. LAR-431-1-0204

LAR 432. Landscape Architectural Design Studio II. (4) II. Two hours lec. and six hours design studio a week. Pr.: LAR 431. LAR-432-1-0204

LAR 433. History and Theory of Landscape Design. (3) I. The influences of social, political, economic, and climatic factors on historic landscape styles; theory of landscape design. Three hours rec. a week. Pr.: First year classification in Professional LAR Program. LAR-433-0-0204

LAR 434. Planting Design I. (3) I. Use of plants as design elements in landscape architectural developments. Plant characteristics of value to the landscape architect. Plant adaptation and ecological considerations. Three hours lec. a week. Field trips required. Pr.: HORT 375, PDP 222. LAR-434-1-0204

LAR 435. Planting Design II. (3) II. Preparation of planting plans and their use as working drawings; specification writing; contractor relationships and maintenance procedures. Eight hours studio a week. Pr.: LAR 434. LAR-435-1-0204

LAR 436. Landscape Construction I. (3) I. Problems in the basic aspects of land construction to include topography, site grading, earthwork estimating, and vehicular requirements. Two hours lec. and six hours studio a week. Pr.: PDP 222, 290, 292. Conc. with CE 212. LAR-436-1-0204

LAR 437. Landscape Construction II. (3) II. Continuation of LAR 436. To include site layout, road alignment, construction detailing, and cost estimating. Two hours lec. and six hours studio a week. Pr.: LAR 436. LAR-437-1-0204

LAR 440. Problems in Landscape Design. (Var.) I, II, S. Assigned problems and reports in the area of landscape architecture. Pr.: Junior standing. LAR-440-3-0204

Undergraduate and graduate credit in minor field

LAR 501. Landscape Architecture Seminar. (2) I, II. Required of all fourth- and fifth-year landscape architecture majors. Discussion of current trends in landscape architecture and related fields by students, faculty, and invited speakers. (Two 2-credit-hour seminars are required for a total of four hours.) LAR-501-2-0204

LAR 548. Composite Planting Design I. (1-4) I. Plant characteristics and their use in landscape architectural design; ecological considerations of site adaptation. Pr.: Graduate standing. LAR-548-1-0204

LAR 549. Composite Planting Design II. (1-4) II. A continuation of LAR 548: the preparation of planting plans and specifications designed to fit a variety of sites. Pr.: Graduate standing and LAR 548. LAR-549-1-0204

LAR 553. Composite Landscape Construction I. (1-4) I. Landscape construction including topography, site planning, site layout, grading, earthwork estimating, lighting, irrigation, construction detailing, cost estimating. Pr.: Graduate standing. LAR-553-1-0204

LAR 554. Composite Landscape Construction II. (1-4) II. A continuation of LAR 553: large area grading, road alignment, storm drainage, utilities layout and specifications, contracts. Pr.: Graduate standing. LAR-554-1-0204

LAR 560. Composite Landscape Design Studio I. (1-4) II. Landscape design including delineation, design process, design elements, small scale design, urban design. Pr.: Graduate standing. LAR-560-1-0204

LAR 561. Composite Landscape Design Studio II. (1-4) I. Continuation of LAR 560: including topics such as community design, resource analysis, park and recreation design, historic preservation, and a terminal landscape project. Pr.: Graduate standing. LAR-561-1-0204

LAR 641 and LAR 642. Landscape Architectural Design Studio III & IV. Design of the outdoor environment for human needs and activities; ecological considerations; project program, site selection, analysis, concept, design, communication, specification, construction, planting, and maintenance.

LAR 641. Landscape Architectural Design Studio III. (4) I. Twelve hours design studio a week. Pr.: LAR 432 and LAR 436. LAR-641-1-0204

LAR 642. Landscape Architectural Design Studio IV. (4) II. Twelve hours design studio a week. Pr.: LAR 641 and LAR 437. LAR-642-1-0204

LAR 643. Planting Design III. (3) I. A continuation of Planting Design II at a more comprehensive scale. Pr.: LAR 435. LAR-643-1-0204

LAR 645. Professional Internship. (2) I, II, S. Confirmed employment in a professional physical planning office, subject to the approval of the departmental faculty, for a period of eight weeks, documented by the employer and a written report by the student. Pr.: LAR 432, LAR 437. LAR-645-2-0204

LAR 647. Landscape Construction III. (3) I. Continuation of LAR 437 to include utilities routing, area lighting, irrigation systems, and construction specification writing. Two hours lec. and six hours studio a week. Pr.: LAR 437. LAR-647-1-0204

LAR 652. The Small Community in the Plains States. (3) I, II, S. An overview of the diverse nature of small communities in the Plains States, with an emphasis on the forms and patterns in the existing physical environment. Instruction in various methods of survey and analysis at the regional and community-specific scales, and application of these techniques to a different community each semester. Pr.: Fourth year standing. LAR-652-1-0204

LAR 660. Landscape Rehabilitation of Disturbed Lands. (3) I. Planning rehabilitation of lands disturbed by mining and construction. Review of mining procedures, ecological systems, slope rehabilitation and revegetation techniques. Three hours lec. a week. Pr.: Junior standing. LAR-660-0-10-0204

Advanced undergraduate and graduate credit

LAR 741. Problems in Landscape Architecture. (Var.) I, II, S. Specific problems and/or reports in the area of landscape architecture. Pr.: Advanced undergraduate or graduate standing. LAR-741-3-0204

LAR 744. Community Site Planning. (3) II. Growth and development of cities and towns; land subdivision. Eight hours lab a week. Pr.: PLAN 315 or consent of instructor. LAR-744-1-0204

LAR 746. Urban Design Studio I. (4) I. An interdisciplinary design studio involving large scale design; projects with extensive time implementation sequence; responses to socio-economic, cultural, environmental, and technical needs; and implementation strategies. Design methods are applied to selected urban areas of the Midwest. Pr.: PLAN 315 or equiv. and conc. enrollment in PLAN 745. LAR-746-1-0204

LAR 750. Graduate Seminar in Landscape Architecture. (1-3) I, II. Discussion of current issues in the profession of landscape architecture. Pr.: Graduate standing in the department. LAR-750-0-0204

LAR 753. Professional Practice. (2) II. Ethics, office practice and procedure, contracts and specifications. A professional resume is required. Two hours rec. a week. Fifth-year classification. LAR-753-0-0204

LAR 756. Design of Parks and Recreation Areas. (3) I. Site planning of national, state, municipal and private parks, and specialized recreation areas. Three hours lec. a week. Pr.: Junior standing. LAR-756-0-0204

LAR 757. Design for Special Populations. (3) II. Design of exterior environments to accommodate the handicapped and disadvantaged individual. Pr.: Advanced undergraduate or graduate standing. LAR-757-0-0204

LAR 758. Land Resource Information Systems. (3) I. The understanding, collection, and application of land resource data to land planning and design. Current methods of resource inventory, ecologically oriented site analysis, and environmental impact assessment. Review of common sources for necessary information in each resource category. Two hours lec. and two hours studio a week. Pr.: Advanced undergraduate or graduate standing. LAR-758-1-0204

LAR 759. Landscape Resource Evaluation. (3) II. The determination of the impact of physical landscape project design upon the natural and man-made environment. Studies of existing site conditions and projections of the effect of such projects upon the site and vicinity. Pr.: Senior or graduate standing. LAR-759-0-0204

LAR 801 and LAR 802. Landscape Architectural Design Studio V & VI. Design of the outdoor environment for human needs and activities; ecological considerations; project program, site selection, analysis, concept, design, communication, specification, construction, planting, and maintenance.

LAR 801. Landscape Architectural Design Studio V. (5) I. Fifteen hours design studio a week. Pr.: LAR 642 and LAR 647. LAR-801-1-0204

LAR 802. Landscape Architectural Design Studio VI. (5) II. Terminal project. Individual studies approved by departmental faculty. Fifteen hours design studio a week. Pr.: LAR 801 and LAR 643. LAR-802-1-0204

LAR 846. Urban Design Studio II. (4) II. Continuation of LAR 746. Pr.: LAR 746 and conc. enrollment in PLAN 845. LAR-846-1-0204

Graduate credit only

LAR 860. Advanced Planting Design. (1-4) I, II, S. Special studies and designs in advanced planting design. Pr.: LAR 643. LAR-860-4-0204

LAR 870. Advanced Landscape Architecture. (1-4) I, II, S. Special studies and designs in advanced landscape architecture. Pr.: LAR 802. LAR-870-4-0204

LAR 880. Advanced Landscape Construction. (1-4) I, II, S. Specialized study of large-scale landscape planning involving landscape construction and grading. Pr.: LAR 647. LAR-880-4-0204

LAR 899. Research in Landscape Architecture. (Var.) I, II, S. Investigations in landscape architecture and related areas, of such caliber as to form the basis for a graduate thesis. Pr.: Graduate standing in landscape architecture. LAR-899-4-0204

Regional and Community Planning

Vernon P. Deines,* head of department

Professors Deines,* Ernst,* Foerster,* Keller,* McGraw,* and Weisenburger;* Associate Professors Keithley* and Selfridge;* Adjunct Lecturer Stith.

Graduate study

Study leading to the two-year professional graduate degree Master of Regional and Community Planning, requiring a minimum of 48 graduate credit hours, is offered on an interdepartmental basis in cooperation with the departments of architecture, civil engineering, economics, geography, landscape architecture, political science, and sociology, and the colleges of agriculture, business administration, education, and home economics. Specializations include community/regional/state planning, urban design/historic preservation, land use/transportation, natural resources/environmental, human resources/social services, and policy/administration/implementation.

The MRCP degree is fully recognized by the American Planning Association and the Association of Collegiate Schools of Planning.

Applicants with undergraduate degrees in administration, agriculture, architecture, business, construction science, economics, ecology, education, engineering, geology, geography, government, home economics, landscape architecture, pre-law, planning, political science, and sociology, who meet the requirements of the Graduate School for admission, are fully acceptable for graduate study in planning. Applicants with other academic backgrounds may be accepted upon approval of the department and subject to such conditions as it may impose.

Undergraduate students may elect to take planning courses either in preparation for graduate study or in fulfillment of undergraduate minors, options, and electives.

The following course list indicates suggested undergraduate study in planning:

PLAN 315	Introduction to Planning
PLAN 590	Problems in Planning
PLAN 620	Planning & Development Codes
PLAN 610	Community Development Workshop
PLAN 700	Planning Analysis
PLAN 705	Planning Communications
PLAN 735	City Planning I
PLAN 755	Regional Planning I
PLAN 740	Small Community & Rural Area Planning
PLAN 750	Housing Policies & Programs
PLAN 725	Planning Theory
PLAN 760	Social Planning
PLAN 640	Planning, Values, & Diverse Groups
PLAN 770	Land Use Planning
PLAN 780	Planning in Developing Areas
ECON 110	Economics I
ECON 120	Economics II
ECON 555	Urban & Regional Economics
GEOG 200	Man, Space, & the Environment
GEOG 750	Urban Geography
SOCIO 211	Introduction to Sociology
SOCIO 531	Urban Sociology
POLSC 110	Introduction to Political Science
POLSC 718	Urban Politics
STAT ---	A course in statistics
CMPSC ---	A course in data processing
	A course in graphics

The following list indicates a suggested undergraduate option in urban design and planning for students in the design and construction professions:

PLAN 315	Introduction to Planning
PLAN 590	Problems in Planning
PLAN 620	Planning & Development Codes
PLAN 610	Community Development Workshop
PLAN 700	Planning Analysis
PLAN 735	City Planning I
PLAN 745	Urban Design
PLAN 746	Urban Design Studio I
PLAN 750	Housing Policies & Programs
PLAN 710	Urban Visual Analysis
PLAN 630	Computer Applications in Planning & Design
PLAN 720	Institutional Planning & Development
ECON 110	Economics I
ECON 120	Economics II
ECON 555	Urban & Regional Economics
GEOG 200	Man, Space, & the Environment
GEOG 750	Urban Geography
SOCIO 211	Introduction to Sociology
SOCIO 531	Urban Sociology
CE 771	Urban Transportation Analysis
ARCH 703	Environmental Aesthetics
POLSC 110	Introduction to Political Science
POLSC 718	Urban Politics
STAT ---	A course in statistics
CMPSC ---	A course in data processing

Graduate students working towards another professional master's degree, master of arts, master of science, or Ph.D. degree, may minor in planning. Select a minor from the following courses:

PLAN 715	Planning Principles
PLAN 750	Housing Policies & Programs
PLAN 705	Planning Communications
PLAN 710	Urban Visual Analysis
PLAN 720	Institutional Planning & Development
PLAN 725	Planning Theory
PLAN 640	Planning, Values, & Diverse Groups
PLAN 700	Planning Analysis
PLAN 760	Social Planning
PLAN 770	Land Use Planning
PLAN 735	City Planning I
PLAN 835	City Planning II
PLAN 745	Urban Design
PLAN 845	Advanced Urban Design
PLAN 746	Urban Design Studio I
PLAN 846	Urban Design Studio II
PLAN 755	Regional Planning I
PLAN 855	Regional Planning II
PLAN 780	Planning in Developing Areas
PLAN 815	Seminar in Planning
PLAN 820	Planning Administration & Implementation
PLAN 825	Advanced Planning Theory
PLAN 800	Research Methods in Planning
PLAN 880	Topics in Planning

For the curriculum requirements for the first four semesters, see pre- design professions earlier in this section.

Courses in regional and community planning

Undergraduate credit

PLAN 315. Introduction to Planning. (3) I, II. The origins and evolution of planning in response to economic, social, political, and physical problems. The planning process and its relationship to the design professions and the social and behavioral sciences. Three hours rec. a week. Pr.: Sophomore standing. PLAN-315-0-0206

Undergraduate and graduate credit

PLAN 590. Problems in Planning. (1-3) I, II, S. Specific planning problems, including process, theory, method and implementation, under direction of department staff. Pr.: Introduction to Planning or equiv. course. PLAN-590-3-0206

PLAN 610. Community Development Workshop. (Var.) I, II, S. Application of interdisciplinary and interprofessional team techniques to the organization, planning, design, development, and evaluation of community development projects on specific topics with real clients and actual locations. Pr.: Introduction to Planning or equiv. course and approval of the instructor. PLAN-610-2-0206

PLAN 620. Planning and Development Codes. (3) I, II. Introduction to federal, state, and local legislation and interpretation of codes related to planning, design, and con-

struction. Pr.: PLAN 315 or equiv. and junior standing. PLAN-620-0-0206

PLAN 630. Computer Applications in Planning and Design. (1-3) I, II, S The application of computer concepts to problem solving and data analysis in the planning and design professions, including the development of user skills in the application of various software packages for data analysis, mapping, and computer assisted design. Pr.: CMPSC 100 or an equiv. course and junior standing. PLAN-630-0-1-0206

PLAN 640. Planning, Values, and Diverse Groups. (3) I, II. Examination of values in traditional and alternative planning of the built environment with emphasis on the needs of special populations. Pr.: Introduction to Planning or an equiv. course. PLAN-640-0-0206

PLAN 700. Planning Analysis. (3) I, II. Introduction to quantitative methods in planning to measure change in the socio-economic-political-physical environment and to analyze the interrelations that guide formulation of comprehensive planning. Pr.: PLAN 315 or equiv. and ECON 555 or equiv. PLAN-700-1-0206

PLAN 705. Planning Communications. (1-4) I. Study and application of communication concepts and media utilized in regional and community planning, topics to be selected from: (A) Graphics, (B) Physical Models, (C) Professional Reports, and (D) Public Hearings. Pr.: Senior status and PLAN 315 or equiv. PLAN-705-1-0206

PLAN 710. Urban Visual Analysis. (3) II. Survey and analysis of urban form and space in relation to aesthetic theories and values. Methods of visual perception and analysis are reviewed and applied to contemporary urban form and space. Pr.: PLAN 745 or equiv. PLAN-710-1-0206

PLAN 715. Planning Principles. (3) I, S. Examination of principles and elements of regional and community planning, including growth forms, physical patterns, planning stages, standards, control measures, and procedures. Pr.: Senior standing and approval of instructor. PLAN-715-0-0206

PLAN 720. Institutional Planning and Development. (3) II. Examination of institutional functions, administrative structues, resources, and policies in the planning and development of physical facilities. Pr.: PLAN 715 or equivalent and nine other credit hours in planning and/or administration courses. PLAN-720-0-0206

PLAN 725. Planning Theory. (3) I. Review of basic theories of regional and community growth and change; analysis of the process of urbanization in relation to societal determinants and environmental constraints, and the synthesis of a process of planning. Pr.: Senior standing and approval of instructor. PLAN-725-0-0206

PLAN 735. City Planning I. (3) I, S. Review of the principles and elements of city growth and change. Criteria and methodology for city analysis and planning are examined and applied to the elements of cities. Pr. or conc.: PLAN 715 or 725. PLAN-735-1-0206

PLAN 740. Small Community and Rural Area Planning. (3) II. Synthesis of small community and rural area change, including, socio-economic-political determinants as a basis for community design and planning. Pr.: PLAN 315 or equiv., plus nine credit hours in Economics, Political Science, and Sociology. PLAN-740-0-0206

PLAN 745. Urban Design. (3) I, II. Review of recent historical developments of urban form and space. Criteria and methodology for urban design and planning are examined and applied to the elements of cities. Pr. or conc.: PLAN 315, or graduate status. PLAN-745-0-0206

PLAN 746. Urban Design Studio I. (4) I. An interdisciplinary design studio involving large scale design; projects with extensive time implementation sequence; responses to socio-economic, cultural, environmental, and technical needs; and implementation strategies. Design methods are applied to selected urban areas of the Midwest. Pr.: PLAN 315 or equiv. and conc. enrollment in PLAN 745. PLAN-746-1-0206

PLAN 750. Housing Policies and Programs. (3) II. Review and evaluation of historical and current housing issues, production and financial systems. Examination of federal, state, and local policies and programs for community development. Pr.: PLAN 315 or equiv. PLAN-750-0-0206

PLAN 755. Regional Planning I. (3) II. Review of the principles and elemcnts of regional growth and change. Criteria and methodology for regional analysis and planning are examined and applied to the elements of regions. Pr.: PLAN 715 or 725. PLAN-755-1-0206

PLAN 760. Social Planning. (3) I, II. Examination of past and present approaches to social planning in the United States. Review and assessment of planning policies, programs, and practices as they impact upon a selected number of social issues. Pr.: PLAN 715 or equiv. and three credit hours each in Economics, Political Science, and Sociology. PLAN-760-0-0206

PLAN 770. Land Use Planning. (3) I, II. Examination of legal history and modern judicial methods for land use regulation within constitutional limits. Introduction to zoning, subdivision, and other police power controls within a comprehensive planning process. Pr.: PLAN 715 or equiv. and ECON 555 or equiv. PLAN-770-0-0206

PLAN 780. Planning in Developing Areas. (3) I, II. Examination of comparative regional and community systems of development, consideration of alternative approaches to planning, with emphasis on developing countries and underdeveloped areas in the rural United States. Pr.: PLAN 715 or an equiv. course plus three credit hours each in Economics, Geography, Political Science, and Sociology. PLAN-780-0-0206

Graduate credit

PLAN 800. Research Methods in Planning. (1-4) II. Considerations in the selection, collection, analysis and interpretation of regional and community planning data, topics to be selected from: (A) Network Analysis, (B) Computer Mapping, (C) Statistical Analysis Programs (SPSS and related), (D) Remote Sensing, (E) Visual Analysis, (F) Linear Programming/Modeling, (G) Policy and Program Analysis. Pr.: PLAN 700, 705, and 715 or equiv., plus one course in Statistics. PLAN-800-1-0206

PLAN 805. Internship in Planning. (1-4) I, II, S. Assignment to a planning staff for a period of at least ten weeks; supervision by a professional planner with periodic reports of activities to planning faculty. Pr.: Completion of two semesters of graduate study in planning. PLAN-805-2-0206

PLAN 810. Practicum in Planning and Development. (Var.) I, II, S. Supervised experience in professional planning and development, including internships, field research, public ser-

vice, and professional workshops. Pr.: PLAN 715 and 725 or conc. enrollment. PLAN-810-2-0206

PLAN 815. Seminar in Planning. (1-3) I, II, S. Discussion of contemporary issues in planning within the framework of professional education as a basis for planning practice. Pr.: Completion of one semester of graduate study. PLAN-815-0-0206

PLAN 820. Planning Administration and Implementation. (3) I, II. Considerations for the planning director in the administration of the planning function and the implementation of the planning process. Pr.: Completion of one semester of graduate study in planning. PLAN-820-0-0206

PLAN 825. Advanced Planning Theory. (3) II. Review of empirical and normative theories of regional and community planning; analysis of principles, hypotheses, concepts, and law of planning and synthesis of a theory of planning. Pr.: PLAN 725 and completion of two semesters of graduate study in planning. PLAN-825-0-0206

PLAN 835. City Planning II. (3) I. Synthesis of city growth and change in relation to planning theory and socio-economic-political determinants. Criteria and methodology for city analysis and planning are reviewed and applied to the elements of the contemporary city. Pr.: PLAN 735 or equiv. PLAN-835-1-0206

PLAN 845. Advanced Urban Design. (3) II. Synthesis of urban form and space in relation to aesthetic theories and values and socio-economic-political determinants. Criteria and methodology for urban design and planning are reviewed and applied to contemporary urban form and space. Pr.: PLAN 745. PLAN-845-0-0206

PLAN 846. Urban Design Studio II. (4) II. Continuation of PLAN 746. Pr.: PLAN 746 and conc. enrollment in PLAN 845. PLAN-846-1-0206

PLAN 847. Urban Design Field Study. (3) I, II, and Intersession. A field investigation of varied large scale institutions, central business districts, and other mixed use developments. Pr.: PLAN 745 and PLAN 746. PLAN-847-1-0202

PLAN 855. Regional Planning II. (3) I. Synthesis of regional growth and change in relation to planning theory and socio-economic-political determinants. Criteria and methodology for regional analysis and planning are reviewed and applied to the elements of the contemporary region. Pr.: PLAN 755 or equiv. PLAN-855-1-0206

PLAN 880. Topics in Planning. (Var.) I, II, S. The study of selected concepts and trends in regional and community planning and development. Pr.: PLAN 715 or graduate standing. PLAN-880-0-0206

PLAN 890. Research in Planning. (Var.) I, II, S. Original research and advanced study in regional and community planning, urban design, and related fields for thesis or master's report. Pr.: Registration in Graduate School and completion of two semesters of graduate study in planning. PLAN-890-4-0206

Center for Regional and Community Planning

Vernon P. Deines, director

The Center for Regional and Community Planning has a threefold function: the creation of public understanding of comprehensive planning and development; the supply of basic information about new techniques and programs in planning and development; and the conduct of research on planning and development problems and methods. These functions of the center are closely related to the graduate program in regional and community planning.

Programs and projects are frequently undertaken in cooperation with other University organizations, including the Center for Aging, Center for Energy Studies, Center for Transportation Research, Institute for Environmental Research, University for Man, Cooperative Extension Service, and Division of Continuing Education.

College of Arts and Sciences

ABRAMS, MARC D., Res. Assoc. of Biology (1983). PhD 1982, Mich. St. Univ.

ADAMCHAK, DONALD J., Assoc. Prof. of Sociology (1978). BA 1973, Ohio Univ.; MA 1975, Western Ky. Univ.; PhD 1978, Bowling Green St. Univ. (GF)

ADAMS, DAVID L., Assoc. Prof. of Journalism; Dir., Student Publications (1981). BS 1969, Washburn Univ.; MS 1972, Univ. of Kan.; EdS 1977, Ft. Hays St. Univ.; PhD 1984, Kan. St. Univ.

ADAMS, MARJORIE, Assoc. Prof. of English (1954). BA 1941, La. Polytechnic; MA 1948, PhD 1951, Univ. of Tex. (GF)

ADAMS, PATRICIA C., Admin. Asst., Biology (1983). MS 1980, Ft. Hays St. Univ.

AGOSTA, LUCIEN, Assoc. Prof. of English (1977). BA 1970, La. St. Univ.; MA 1971, PhD 1977, Univ. of Tex. (GF)

AKKINA, KRISHNA RAO, Assoc. Prof. of Economics (1972). BA 1963, Univ. of Andhra; MA 1965, Delhi School of Economics; PhD 1972, Univ. of Minn. (GF)

ALEXANDER, LOREN R., Asst. Prof. of Modern Languages and Education (1965). BM 1951, Southwestern Col.; MA 1954, Colo. St. Col. of Educ.; MA 1965, PhD 1971, Mich. St. Univ. (GF)

ALSOP, INEZ, Assoc. Prof. of History Emerita (1923). BS 1916, Emporia St. Univ.; MS 1920, Univ. of Kan. (GF)

ANDERSON, CATHY L., Asst. Prof. of Speech (1980). BA 1974, Lyndon St. Col.; MFA 1980, Univ. of Conn.

ANDERSON, PHILLIP D., Instr. of Speech (1983). MA 1966, Ind. Univ.

ANDRUS, LYNDA E., Instr. of Art (1983). MA 1981, Univ. of Iowa.

ANSDELL, ORA JOYE, Assoc. Prof. of English Emerita (1946). BS 1932, Kan. St. Univ.; MA 1939, Univ. of Mich.; BLS 1946, Univ. of Chicago; PhD 1956, Univ. of Colo. (GF)

APPLEGATE, ROBERTA G., Assoc. Prof. of Journalism and Mass Communications (1964). AB 1940, Mich. St. Univ.; MS 1942, Northwestern Univ.

ARMAGOST, JAMES L., Assoc. Prof. of Speech (1973). BA 1963, Univ. of Calif., Santa Barbara; MA 1972, PhD 1973, Univ. of Wash., Seattle. (GF)

ARMAGOST, KATHRYN M., Instr. of Modern Languages (1983). MA 1968, Univ. of Calif.

ASENETA, LYDIA, Assoc. Prof. of Speech (1967). BS 1949, MA 1958, The National Teachers' Col. of the Philippines; MA 1968, Kan. St. Univ.

BABCOCK, MICHAEL W., Assoc. Prof. of Economics (1972). BS, BA 1967, Drake Univ.; MA 1969, PhD 1973, Univ. of Ill. (GF)

BAGLEY, EDGAR SIDNEY, Prof. of Economics Emeritus (1940). BA 1935, MA 1936, Univ. of Calif. at Los Angeles; PhD 1950, St. Univ. of Iowa. (GF)

BAKER, LYMAN A., JR., Instr. in English (1972). BA 1964, Univ. of Mo.; MA 1968, Stanford Univ.

BARAB, JACQUELINE E., Asst. Prof. of Mathematics (1982). BS 1971, Ind. Univ.; MS 1974, Ga. St. Univ.; PhD 1982, Ind. Univ.

BARFOOT, DOROTHY, Prof. of Art Emerita (1930). BA, St. Univ. of Iowa; MA 1928, Columbia Univ. (GF)

BARK, LAURENCE DEAN, Prof. of Physics; Climatologist, Agr. Exp. Sta. (1956). BS 1948, MS 1950, Univ. of Chicago; PhD 1954, Rutgers Univ. (GF)

BARKLEY, THEODORE M., Prof., Division of Biology; Curator of the Herbarium; Taxonomist, Agr. Exp. Sta. (1961). BS 1955, Kan. St. Univ.; MS 1957, Ore. St. Univ.; PhD 1960, Columbia Univ. (GF)

BARNES, CAROL ANN, Instr. of English (1983). MA 1969, Wichita St. Univ.

BARNETT, MARK A., Assoc. Prof. of Psychology (1975). BA 1971, PhD 1975, Northwestern Univ. (GF)

BASCOM, KATHRYN M. Instr. of English (1983). BA 1953, Univ. of Kan.

BASHAM, EDWIN, Instr., Computer Science (1976). BS 1946, U.S. Military Academy; MS 1959, Ga. Inst. of Tech.

BATES, RODNEY M., Asst. Prof. of Computer Science (1978). BS 1967, MS 1968, PhD 1971, Kan. St. Univ.

BAUMAN, DOREEN J., Dir. of Auditorium (1980). BA 1970, San Jose St. Univ.

BAUMANN, ROBERT F., Asst. Prof. of History (1983). PhD 1982, Yale Univ.

BEARY, DEXTER F., Instr. of Biology (1983). PhD 1967, Loma Linda Univ.

BECHTEL DONALD B., Asst. Prof. of Biology; Res. Biologist, Grain Marketing Research Center (1983). BS 1971, MS 1974, Iowa St. Univ.; PhD 1982, Kan. St. Univ.

BECK, HENRY VOORHEES, Prof. of Geology (1946). BS 1946, MS 1949, Kan. St. Univ.; PhD 1955, Univ. of Kan. (GF)

BEDROSIAN, JANICE L., Asst. Prof. of Speech Pathology (1982). MA 1976, Univ. of Cal. at Santa Barbara; PhD 1981, Univ. of Wis.

BEESON, MARGARET E., Assoc. Prof. of Modern Languages (1960). AB 1948, Wesleyan Col.; MA 1949, Emory Univ.; PhD 1954, Univ. of Tex. (GF)

BENSON, DOUGLAS K., Assoc. Prof. of Modern Languages (1980). BA 1966, N.M. St. Univ.; MA 1968, PhD 1973, Univ. of N.M. (GF)

BENSON, JANET, Assoc. Prof. of Anthropology (1972). BA 1964, Ariz. St.; MA 1969, PhD 1974, Brandeis. (GF)

BETTON, MATTHEW T., Prof. of Music (1978). BA 1938, Kan. St. Univ.

BHALLA, CHANDER P., Prof. and Head of Physics (1966). BS 1952, BSc 1954, MS 1955, Punjab Univ.; PhD 1960, Univ. of Tenn. (GF)

BIXLER, PHYLLIS, Assoc. Prof. of English (1978). BA 1961, Bluffton Col.; MA 1967, MPhil 1973, PhD 1977, Univ. of Kan. (GF)

BODE, VERNON C., Prof. of Biology (1970). BS 1955, Univ. of Mo.; PhD 1962, Univ. of Ill. (GF)

BONTRAGER, ROBERT D., Assoc. Prof. of Journalism and Mass Communications (1970). BA 1945, Taylor Univ.; STB 1948, New York Theological Seminary; BS 1950, Taylor Univ.; MA 1950, PhD 1969, Syracuse Univ. (GF)

BOREL, DAVID M., Adjunct Clinical Assoc. of Med. Tech. (1980). BA 1967, Univ. of Kan.; MD 1971, Univ. of Kan. Med. Cntr.

BOYER, JOHN E., JR., Asst. Prof. of Statistics (1981). BS 1969, Univ. of Neb.; MS 1972, PhD 1976, Mich. St. Univ. (GF)

BRADLEY, DOROTHY G., Instr. of Economics Emerita (1947). BS 1932, Northwestern Univ.; MS 1950, Kan. St. Univ.

BRAUN, DALE E., Asst. Prof. of Aerospace Studies (1984). BA 1974, S.D. St. Univ.; MA 1981, Univ. of Northern Calif.

BREDE, RICHARD M., Asst. Prof. of Sociology (1971). BA 1962, MS 1964, Univ. of Ore.; PhD 1971, Univ. of Ill. (GF)

BRIDGES, RONALD L., Asst. Instr. of Chemistry (1983). BS 1969, Kan. St. Univ.

BRISTOW, ANN R., Asst. Prof. of Psychology (1980). BS 1971, MS 1973, PhD 1977, Va. Commonwealth Univ. (GF)

BRONDELL, WILLIAM JOHN, Asst. Prof. of English (1964). AB 1959, MA 1964, PhD 1964, Univ. of Mo. (GF)

BROOKHART, CHARLES EDWARD, Prof. of Music and Education (1975). BM 1949, MM 1950, PhD 1960, George Peabody Col. (GF)

BROWN, SUSAN J., Res. Assoc. of Biochemistry (1983). BS 1978, Smith Col.

BROWN, WILBUR E., Assoc. Prof. of Journalism (1970). BS 1949, Kan. St. Univ.

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BULBULIAN, RONALD, Asst. Prof. of Health, Physical Education, and Recreation (1981). BS 1974, MS 1975, Brigham Young; PhD 1980, Univ. of Southern Calif.

BULLER, LEROY G., Asst. Prof. of Journalism (1983). BS 1975, MS 1976, Kan. St. Univ.

BULMAHN, HEINZ, Assoc. Prof. of Modern Languages (1972). BSE 1966, Drake Univ.; MA 1969, PhD 1974, Univ. of Wis.

BUNTON, NORMA D., Prof. and Head, Department of Speech (1954). BS 1939, Southwest Tex. St. Col.; MEd 1947, Univ. of Tex.; PhD 1954, St. Univ. of Iowa. (GF)

BURCKEL, GLENNA F., Instr. of Modern Languages (1982). MA 1967, Boston Univ.

BURCKEL, ROBERT B., Prof. of Mathematics (1971). BS 1961, Univ. of Notre Dame; MA 1963, PhD 1968, Yale Univ. (GF)

BURKHARD, RAYMOND KENNETH, Prof. of Biochemistry; Biochemist, Agr. Exp. Sta. (1950). AB 1947, Ariz. St. Col.; PhD 1950, Northwestern Univ. (GF)

BUSSING, CHARLES EARL, Asst. Prof. of Geography (1964). BA 1959, Colo. St. Col.; MA 1961, Univ. of Colo.; PhD 1968, Univ. of Neb. (GF)

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CALHOUN, MYRON AMMON, Assoc. Prof. of Computer Science (1971). AA 1961, Graceland Col.; BS 1963, Univ. of Kan.; MS 1964, Colo. St. Univ.; PhD 1967, Ariz. St. Univ. (GF)

CAMP, HENRY J., Asst. Prof. of Sociology (1971). BS 1966, Ill. St. Univ.; MA 1969, PhD 1974, Univ. of Neb. (GF)

CAMPBELL, JOSEPH K., Instr. of Computer Science (1983). MS 1976, Kan. St. Univ.

CAMPBELL, MARYANN A., Instr. of Sociology (1983). MA 1980, Washburn Univ.

CARDWELL, ALVIN BOYD, Prof. of Physics Emeritus (1936). BS 1925, DSc 1961, Univ. of Chattanooga; MS 1927, PhD 1930, Univ. of Wis. (GF)

CAREY, JAMES CHARLES, Prof. of History Emeritus (1948). BA 1937, Neb. St. Teachers Col. (Wayne); MA 1940, PhD 1948, Univ. of Colo. (GF)

CAREY, JOHN N., Asst. Prof. of Military Science (1982). BS 1976, Pittsburg St. Univ.

CARPENTER, WILLIAM E., Assoc. Dean and Prof. of English (1973). BA 1960, Centenary Col.; PhD 1967, Univ. of Kan. (GF)

CARREL, ANN MARIE, Instr. of English (1983). MA 1982, Kan. St. Univ.

CARTWRIGHT, KENT, Asst. Dean (1979). BA 1965, MA 1968, Univ. of Mich.; PhD 1979, Case Western Reserve Univ.

CASAS-RUIZ, GERMAN G., Instr. of Modern Languages (1983). MA 1971, Kan. St. Univ.

CENTER, MELVIN S., Assoc. Prof. of Biology (1970). BS 1962, Univ. of Ga.; MS 1964, PhD 1967, Medical Col. of Ga. (GF)

CHALMERS, JOHN, Prof. of Economics (1963). AB 1938, Middlebury Col.; PhD 1943, Cornell Univ. (GF)

CHAPIN, ERNEST KNIGHT, Assoc. Prof. of Physics Emeritus (1923). AB 1918, MS 1923, Univ. of Mich. (GF)

CHAUDHURI, SAMBHUDAS, Prof. of Geology (1966). BS 1956, Calcutta Univ., India; MS 1958, Jadavpur Univ., India; MS 1961, Indiana Univ.; PhD 1966, Ohio St. Univ. (GF)

CHELIKOWSKY, JOSEPH RUDOLPH, Prof. of Geology Emeritus (1937). BA 1931, MA 1932, PhD 1935, Cornell Univ. (GF)

CHERMAK, ANDREW, Asst. Prof. of Mathematics (1982). AB 1971, PhD 1975, Rutgers Univ.

CHOE, YOUNG H., Asst. Prof. of Mathematics (1983). PhD 1981, Univ. of Ill.

CHOWDHURY, ABUL K., Res. Assoc. of Chemistry (1978). PhD 1978, Bedford Co.

CHREST, JOHN A., Instr. of Sociology (1982). MA 1981, Univ. of Wis.

CHRISMAN, MICHAEL J., Asst. Prof. of Aerospace Studies (1984). BA 1974, Angelo St. Univ.; MA 1979, Webster Col.

CHRISTIANSON, KRIS K., Res. Asst. of Biology (1983). MS 1983, Kan. St. Univ.

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CLARK, DONALD F., Asst. Prof. of Military Science (1984). BS 1972, U.S. Military Academy; MS 1979, Clemson Univ.

CLARK, GEORGE R., II, Assoc. Prof. of Geology (1977). AB 1961, Cornell Univ.; MS 1966, PhD 1969, Caltech. (GF)

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CLEGG, ROBERT E., Prof. of Biochemistry (1948). BS 1936, R.I. St. Col.; MS 1939, N.C. St. Col.; PhD 1948, Iowa St. Univ. (GF)

CLELAND, MARJORIE V., Instr.; Asst. to the Dean (1970). BA 1968, MS 1970, Kan. St. Univ.

CLIFT, GARY W., Instr. of English (1983). MS 1980, Kan. St. Univ.

CLIMENHAGA, JOEL, Assoc. Prof. of Speech (1968). BA 1953, MA 1958, Univ. of Calif. at Los Angeles. (GF)

CLINTON, WILLIAM D., Asst. Prof. of Political Science (1983). MA 1978, Univ. of Va.

CLORE, ROBERT ALVIN, Asst. Prof. of Art (1970). AA 1966, Casper Col.; BA 1968, MA 1970, Univ. of Northern Colo.; MFA 1977, Univ. of Kan.

COCHRAN, ALFRED W., Instr. of Music (1979). BME 1972, Memphis St. Univ.; MM 1975, Catholic Univ.

COCKE, CHARLES L., Prof. of Physics (1969). AB 1962, Haverford Col.; PhD 1967, Calif. Inst. of Tech. (GF)

COCKE, ENOD O., Instr. of English (1983). BA 1967, Scripps Col.

COHEN, PETER Z., Assoc. Prof. of English (1961). BS 1953, MA 1961, Univ. of Wyo.

COLE, MICHAEL W., Instr. of Computer Science (1984). BS 1965, Utah St. Univ.

COLE, ROBERT E., Asst. Prof. of Military Science (1983). BA 1977, Mich. St. Univ.

COMPAAN, ALVIN, Prof. of Physics (1973). AB 1965, Calvin Col.; MS 1966, PhD 1971, Univ. of Chicago. (GF)

CONDERMAN, LINDA J., Instr. of English (1984). MA 1972, St. Univ. of New Paltz.

CONRAD, ABIGAIL H., Instr. of Biology (1983). PhD 1969, Yale Univ.

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CONROW, KENNETH, Assoc. Prof. of Computer Science; Assoc. Dir. Computing Center (1961). BA 1954, Swarthmore Col.; PhD 1957, Univ. of Ill. (GF)

CONROW, MARGARET E., Assoc. Prof. of English (1964). BA 1954, Swarthmore Col.; MA 1955, PhD 1962, Univ. of Ill. (GF)

CONSIGLI, RICHARD ALBERT, Prof. of Biology; Virologist, Agr. Exp. Sta. (1963). BS 1954, Brooklyn Col.; MA 1956, PhD 1960, Univ. of Kan. (GF)

CONWAY, KATHLEEN M., Res. Asst. of Biology (1983). BS 1981, St. Univ. of N.Y.

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COPELAND, DOUGLAS W., Instr. of Economics (1984). MA 1980, Univ. of Mo.

COPELAND, JAMES L., Prof. of Chemistry (1962). BS 1952, Univ. of Ill.; PhD 1962, Ind. Univ. (GF)

CORUM, ROBERT T., Assoc. Prof. of Modern Languages (1977). BA 1969, Old Dominion Col.; MA 1971, PhD 1975, Univ. of Va. (GF)

COWAN, THADDEUS M., Prof. of Psychology (1970). BA 1957, Centre Col. of Ky.; MS 1959, PhD 1964, Univ of Conn. (GF)

COX, CHARLENE, Asst. Instr. of Music (1977). BA 1957, Kan. St. Univ.

COX, DAVID J., Prof. and Head of Biochemistry; Biochemist, Agr. Exp. Sta. (1973). BA 1956, Wesleyan Univ.; PhD 1960, Univ. of Pa. (GF)

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CRAWFORD, GOLDA M., Assoc. Prof. of History Emerita (1946). BS 1928, MS 1940, Kan. St. Univ.; PhD 1963, Syracuse Univ. (GF)

CRAWFORD, NAOMI Z., Instr. in Chemistry Emerita (1922). BS 1919, MS 1922, Univ. of Neb.

CULLERS, ROBERT L., Prof. of Geology (1971). BS 1959, MA in Chemistry 1962, Ind. Univ.; PhD 1971, Univ. of Wis. (GF)

CULLEY, LOUANN F., Assoc. Prof. of Art (1971). BFA 1957, MA 1967, Univ. of N.M.; PhD 1975, Stanford Univ. (GF)

CUNDY, DONALD T., Asst. Prof. of Art (1983). PhD 1976, Univ. of Ore.

CUNNINGHAM, BRYCE A., Assoc. Prof. of Biochemistry; Assoc. Biochemist, Agr. Exp. Sta. (1963). BA 1955, BS 1958, PhD 1963, Univ. of Minn. (GF)

CURNUTTE, BASIL, JR., Prof. of Physics; Assoc. Physicist, Agr. Exp. Sta. (1954). BS 1945, U.S. Naval Academy; PhD 1953, Ohio St. Univ. (GF)

CURTIS, W.D., Prof. of Mathematics (1970). BA 1966, Univ. of Fla.; PhD 1970, Univ. of Mass. (GF)

CZUCHAJOWSKI, LESZEK, Asst. Prof. of Chemistry (1982). PhD 1961, Univ. of Aca Mining, Poland.

DACE, WALLACE, Prof. of Speech (1963). AB 1943, Ill. Wesleyan Univ.; MFA 1948, Yale Univ.; PhD 1952, Denver Univ. (GF)

DAHL, CHARLOTTE L., Instr. of English (1983). BA 1952, Kan. St. Univ.

DALE, BETTIE M., Advisor; Dean, Arts and Sciences office (1964). BS 1946, Baylor; MS 1951, PhD 1954, Ohio St. Univ.

DALE, E. BROCK, Prof. of Physics (1957). BS 1940, MS 1944, Univ. of Okla.; PhD 1953, Ohio St. Univ. (GF)

DALY, ROBERT K., Asst. Prof. of Journalism and Mass Communications (1973). AB 1967, Marquette Univ.; MA 1973, Sangamon St. Univ.

DAVIS, EARLE ROSCO, Prof. of English Emeritus (1949). AB 1927, BM 1929, Monmouth Col.; MA 1928, Univ. of Ill.; PhD 1935, Princeton Univ. (GF)

DAVIS, LAWRENCE CLARK, Assoc. Prof. of Biochemistry; Assoc. Biochemist, Agr. Exp. Sta. (1975). BS 1966, Haverford Col.; PhD 1970, Yeshiva Univ. (GF)

DAVIS, SUSAN A., Instr. of Sociology (1982). BA 1979, Kan. St. Univ.

DAYTON, ARTHUR D., Prof.; Head of Statistics and Dir., Statistical Laboratory, Agr. Exp. Sta. (1966). BS 1960, Berea Col.; MS 1964, PhD 1967, Mich. St. Univ. (GF)

DEATON, MICHAEL L., Asst. Prof. of Statistics (1981). BS 1974, David Lipscomb Col.; MS 1976, Memphis St. Univ.; PhD 1980, Va. Polytechnic Inst. (GF)

DeCOU, DONALD FRANK, Assoc. Prof. of Economics Emeritus (1947). BS 1929, Pittsburg St. Univ.; MBA 1934, Northwestern Univ.; 1966, Univ. of Wis. (GF)

DEES, JEROME STEELE, Assoc. Prof. of English (1976). BA 1958, Catawaba Col.; MA 1961, Fla. St. Univ.; PhD 1968, Univ. of Ill., Urbana (GF)

DEHON, CLAIRE LOUISE, Assoc. Prof. of Modern Languages (1972). BA 1962, Royal Art Institute of Brussels; MA 1964, MA 1969, M.Phil. 1971, PhD 1973, Univ. of Kan. (GF)

DENELL, ROBIN, Assoc. Prof. of Biology (1972). BA 1965, Univ. of Calif.; MA 1968, PhD 1969, Univ. of Tex. (GF)

DENNING, JANICE M., Instr. of Sociology (1984). MA 1978, Kan. St. Univ.

DENNING, NANCY R., Instr. of English (1984). MA 1979, Kan. St. Univ.

DIKEMAN, EARLINE F., Asst. Instr. of Chemistry (1983). BS 1969, Bethany Nazarene Col.; MS 1972, Kan. St. Univ.

DILLINGHAM, T. RANDY, Res. Assoc. of Physics (1983). MS 1983, Kan. St. Univ.

DIXIT, APARNA, Res. Assoc. of Biology (1981). PhD 1981, Nehru Univ., New Delhi, India.

DIXON, LYLE J., Prof. of Mathematics (1963). BS 1948, MS 1950, Okla. St. Univ.; PhD 1963, Univ. of Kan. (GF)

DOLLAR, DIANE A., Instr. of Art (1976). BS 1955, MA 1967, Kan. St. Univ.

DONAGHY, HENRY J., Prof. and Head of English (1983). AB 1954, Stonehill Col.; MA 1960, Fordham Univ.; PhD 1966, N.Y. Univ.

DONNELLY, MICHAEL L., Asst. Prof. of English (1972). AB 1963, Harvard Col.; PhD 1970, Harvard Univ. (GF)

DONOVAN, ROBERT KENT, Asst. Prof. of History (1964). BA 1954, Harvard Univ.; BA 1958, MA 1963, Cambridge Univ.; PhD 1965, Harvard Univ. (GF)

DOVETON, JOHN D., Prof. of Geology (1982). PhD 1970, Univ. of Edinburgh, Scotland.

DRAGSDORF, R. DEAN, Prof. of Physics (1948). BS 1944, PhD 1948, Mass. Inst. of Tech. (GF)

DRESSLER, ROBERT E., Prof. of Mathematics (1970). BA 1965, Univ. of Rochester; MA 1966, PhD 1969, Univ. of Ore. (GF)

DRISS, ANN, Instr. of Modern Languages (1967). AB 1952, Washburn Univ.; MS 1966, Emporia St. Univ.

DUSHKIN, LELAH, Assoc. Prof. of Sociology (1968). AB 1953, Smith Col.; MS 1956, PhD 1974, Univ. of Pa. (GF)

ECK, JOHN S., Prof., Physics (1969). BS 1962, Polytechnic Inst. of Brooklyn; PhD 1967, The Johns Hopkins Univ. (GF)

EDWARDS, JENNIFER R., Asst. Instr. of Music (1973). BA 1967, Austin St. Col.; MA 1970, Univ. of Ore.

EDWARDS, ROBERT L., Assoc. Prof. of Music (1972). BM 1961, MM 1963, Wichita St.; DMA 1972, Univ. of Ore. (GF)

EITNER, WALTER H., Prof. of English (1954). AB 1948, Univ. of Denver; AM 1949, Univ. of Mich.; PhD 1959, Univ. of Denver. (GF)

ELLSWORTH, LOUIS DANIEL, Prof. of Physics (1946). BS 1937, Case Inst. of Tech.; MS 1938, PhD 1941, Ohio St. Univ. (GF)

EMERSON, M. JARVIN, Prof. of Economics (1962). BA 1957, Luther Col.; MA 1960, PhD 1963, Univ. of Iowa. (GF)

EVANS, EDWARD W., Res. Assoc. of Biology (1981). PhD 1980, Cornell Univ.

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EXDELL, JOHN B., Asst. Prof. of Philosophy (1972). BA 1967, Dickinson Col.; PhD 1973, Univ. of Tex. at Austin (GF)

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FEDDER, NORMAN J., Prof. of Speech (1970). BA 1955, Brooklyn Col.; MA 1956, Columbia Univ.; PhD 1962, N.Y. Univ. (GF)

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FINA, GARY T., Asst. Instr. of Chemistry (1983). MS 1975, Univ. of Ill.

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FINNEGAN, MICHAEL, Prof. of Anthropology (1973). BA 1967, MA 1970, PhD 1972, Univ. of Colo. (GF)

FISHER, PAUL S., Prof. and Head of Computer Science (1967). BA 1963, MA 1964, Univ. of Utah; PhD 1969, Ariz. St. Univ. (GF)

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FITZGERALD, DONALD M., Visiting Professional of Journalism (1984). BA 1942, Univ. of Kan.

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FLOUER, JACK, Prof. of Music (1971). BME 1960, Marshall Univ.; MM 1962, Eastman School of Music; DM 1971, Ind. Univ. (GF)

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FRAZIER, EVELYN M., Instr. of English (1984). MA 1970, Kan. St. Univ.

FREELAND, GLORIA B., Instr. of Journalism; Asst. Dir. of Student Publications (1983). BA 1975, MS 1983, Kan. St. Univ.

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FRIEDMANN, EUGENE ALVIN, Prof.; Head of Department of Sociology, Anthropology and Social Work (1965). AB 1947, MA 1949, PhD 1953, Univ. of Chicago. (GF)

FRIEMAN, JEROME, Assoc. Prof. of Psychology (1968). BA 1963, MS 1965, Western Reserve Univ.; PhD 1969, Kent St. Univ. (GF)

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FRYER, HOLLY CLAIRE, Prof. of Statistics Emeritus (1940). BS 1931, Univ. of Ore.; MS 1933, Ore. St. Univ.; PhD 1940, Iowa St. Univ. (GF)

FULLER, LEONARD E., Prof. of Mathematics (1952). BA 1941, Univ. of Wyo.; MS 1947, PhD 1950, Univ. of Wis. (GF)

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GARG, LAIT C., Res. Assoc. of Biochemistry (1982). PhD 1980, Univ. of Jawahara, India.

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GRAY, TOM J., Prof. of Physics (1977). BS 1960, MS 1962, North Tex. St. Univ.; PhD 1967, Fla. St. Univ. (GF)

GREECHIE, RICHARD J. Prof. of Mathematics (1967). BS 1962, Boston Col.; PhD 1966, Univ. of Fla. (GF)

GREENE, CARROLL B., Asst. Prof. of Economics (1981). BA 1963, Fla. St. Univ.; MA 1977, Calif. St. Univ. at Northridge.

GRIFFITH, GARY R., Res. Assoc. of Biology (1981). PhD 1973, Okla. St. Univ.

GRIFFITT, WILLIAM B., Prof. of Psychology (1968). BA 1964, Kan. St. Univ.; PhD 1967, Univ. of Tex. (GF)

GRINDELL, ROBERT M., Assoc. Prof. of English (1972). AB 1956, Harvard Univ.; MA 1964, N.Y. Univ.; PhD 1972, Univ. of Ariz. (GF)

GROSH, DORIS L., Assoc. Prof. of Industrial Engineering; Joint Appt. with Department of Statistics (1965). BS 1946, Univ. of Chicago; MS 1949, PhD 1969, Kan. St. Univ. (GF)

GROSWALD, DOUGLAS E., Res. Assoc. of Biology (1983). PhD 1979, Univ. of Colo.

GUIKEMA, JAMES A., Asst. Prof. of Biology; Plant Physiologist, Agr. Exp. Sta. (1981). BA 1973, Calvin Col.; PhD 1978, Univ. of Mich. (GF)

GURTZ, MARTIN E., Res. Assoc. of Biology (1980). PhD 1980, Univ. of Ga.

GUSTAFSON, DAVID A., Asst. Prof. of Computer Science (1977). B. Math 1967, Univ. of Minn.; BS 1969, Univ. of Utah; MS 1973, PhD 1979, Univ. of Wis.

GUSTAFSON, MERLIN DeWAYNE, Assoc. Prof. of Political Science (1960). BS 1943, MS 1947, Kan. St. Univ.; PhD 1956, Univ. of Neb. (GF)

HADJIPANAYIS, GEORGE, Asst. Prof. of Physics (1982). BS 1969, Univ. of Athens; MS 1974, PhD 1978, Univ. of Manitoba.

HAGAN, PATRICIA W., Instr. of Art (1971). BS 1970, Kan. St. Univ.

HAGMANN, SIEGBERT, Asst. Prof. Physics (1980). MA 1973, Univ. of Munster; PhD 1977, Univ. of Cologne. (GF)

HAJDA, JOSEPH, Prof. of Political Science (1957). BA 1951, MA 1952, Miami Univ.; PhD 1955, Ind. Univ. (GF)

HALL, DEAN G., Asst. Prof. of English (1983). BA 1968, MA 1970, Univ. of Northern Iowa; PhD 1977, Kent. St. Univ.

HAMILTON, JAMES R. Assoc. Prof. of Philosophy (1971). BA 1964, Pfeiffer Col.; MA 1967, Emory Univ.; MDiv 1968, Union Theological Seminary; PhD 1974, Univ. of Tex. at Austin. (GF)

HAMMAKER, ROBERT M., Prof. of Chemistry (1961). BS 1956, Trinity Col.; PhD 1960, Northwestern Univ. (GF)

HAMSCHER, ALBERT N., III, Assoc. Prof. of History (1972). BA 1968, Pa. St. Univ.; MA 1970, PhD 1973, Emory Univ. (GF)

HANKLEY, WILLIAM JOHN, Prof. of Computer Science (1972). BSEE 1962, MS 1964, Northwestern Univ.; PhD 1967, Ohio St. Univ. (GF)

HANSEN, JEFFREY S., Res. Asst. of Biology (1979). BS 1976, Iowa St. Univ.

HANSEN, MERLE FREDRICK, Prof. of Biology Emeritus; Parasitologist, Agr. Exp. Sta. (1950). AB 1939, MA 1941, Univ. of Minn.; PhD 1948, Univ. of Neb. (GF)

HARMES, DAVID L., Instr. of Art (1981). BA 1968, Kansas City Art Institute.

HARRIS, CAROL I., Instr. of Physics (1982). BS 1960, MS 1967, Kan. St. Univ.

HARRIS, RICHARD J., Assoc. Prof. of Psychology (1974). BA 1968, Col. of Wooster; MA 1971, PhD 1974, Univ. of Ill. (GF)

HARRIS, T. ROBERT, Asst. Prof. of Sociology (1973). BA 1965, Reed Col.; PhD 1972, The Johns Hopkins Univ. (GF)

HARRIS, VIDA AGNES, Assoc. Prof. of Art Emerita (1924). BS 1914, Kan. St. Univ.; AM 1927, Univ. of Chicago. (GF)

HARRISS, STELLA, Asst. Prof. of Chemistry Emeritus (1919). BS 1917, MS 1919, Kan. St. Univ.

HARTLEY, ROGER T., Asst. Prof. of Computer Science (1981). BA 1969, New Col., Oxford; PhD 1974, Brunel Univ.

HAWES, JOSEPH M., Prof. and Head of History (1971). BA 1960, Rice Univ.; MA 1962, Okla. St. Univ.; PhD 1969, Univ. of Tex. at Austin. (GF)

HAWLEY, M. DALE, Prof. of Chemistry (1966). BA 1960, MA 1962, Univ. of Northern Iowa; PhD 1965, Univ. of Kan. (GF)

HAY, MICHAEL S., Res. Asst. of Biology (1983). BS 1983, Kan. St. Univ.

HAYES, DEBORAH C., Res. Asst. of Biology (1983). MS 1982, Kan. St. Univ.

HECKMAN, MARY, Adjunct Clinical Instr. of Med. Tech. (1976). AB 1946, Univ. of Mo., KC; MA 1961, PhD 1966, Univ. of Kan.

HEDGCOTH, CHARLIE, JR., Prof. of Biochemistry; Biochemist, Agr. Exp. Sta. (1965). BS 1961, PhD 1965, Univ. of Tex. (GF)

HEDRICK, DONALD K., Assoc. Prof. of English (1976). BA 1969, Univ. of Kan.; MA 1972, PhD 1974, Cornell Univ. (GF)

HELLER, STEVE F., Asst. Prof. of English (1981). BA 1971, MS 1976, PhD 1978, Okla. St. Univ.; MFA 1981, Bowling Green St. Univ. (GF)

HEMPHILL, DWAINE R., Instr. of Speech (1981). BA 1980, MA 1981, Morehead St. Univ.

HERMAN, LOUIS M., Asst. Prof. of Mathematics (1970). BA 1963, MS 1965, Univ. of Fla.; PhD 1970, Univ. of Mass. (GF)

HENRY, DAVID H., Asst. Prof. of Statistics (1983). BS 1979, Univ. of Pittsburgh; PhD 1983, Stanford Univ.

HEYNS, TERRY L., Prof. of Aerospace Studies (1980). AB 1965, St. Louis Univ.; MA 1967, Univ. of Kan.

HIGGINS, JAMES J., Assoc. Prof. of Statistics; Consultant, Ag. Exp. Sta. (1980). BS 1965, Univ. of Ill.; MS 1967, Ill. St. Univ.; PhD 1970, Univ. of Mo.-Columbia. (GF)

HIGGINSON, FRED H., Prof. of English Emeritus (1950). AB 1942, MA 1947, Univ. of Wichita; PhD 1953, Univ. of Minn. (GF)

HIGHAM, BARBARA C., Instr. in Economics (1974). BA 1948, Mt. Holyoke; MA 1950, Columbia Univ.

HIGHAM, ROBIN, Prof. of History (1963). AB 1950, Harvard Col.; MA 1953, Claremont Grad. School; PhD 1957, Harvard Univ. (GF)

HILL, DAVID M., Res. Asst. of Physics (1982). BS 1960, Kan. St. Univ.

HILL, JEROME A., Instr. of Computer Science (1983). MS 1981, Kan. St. Univ.

HILL, OPAL BROWN, Assoc. Prof. of Art Emerita (1944). BS 1944, MS 1950, Kan. St. Univ. (GF)

HILL, RANDALL CONRAD, Prof. of Sociology Emeritus (1929). BS 1924, MS 1927, Kan. St. Univ.; PhD 1929, Univ. of Mo. (GF)

HINRICHS, CARL, Assoc. Prof. of Speech (1964). AB 1959, MA 1960, Univ. of N.C. (GF)

HOLDEN, JONATHAN, Assoc Prof. of English (1978). BA 1963, Oberlin Col.; MA 1970, San Francisco St. Col.; PhD 1974, Univ. of Colo. (GF)

HOLSTEAD, CAROL E., Instr. of Speech (1984). BA 1980, Kan. St. Univ.

HOLT, DONALD N., Assoc. Prof. of Journalism and Mass Communications (1974). BA 1950, Univ. of Colo.; MS 1970, Univ. of Wis.

HOOK, PATRICIA W., Instr. of Biology (1970). BA 1963, MS 1965, Kan. St. Univ.; PhD 1970, Ore. St. Univ.

HOWE, F. VIRGINIA, Prof. of Journalism Emerita (1952). EdD 1958, Boston Univ.

HUA, DUY, Asst. Prof. of Chemistry (1982). BS 1976, Kyoto Univ., Japan; PhD 1979, Southern Ill. Univ. at Carbondale.

HULBERT, LLOYD C., Prof. of Biology; Ecologist, Agr. Exp. Sta. (1955). BS 1940, Mich. St. Univ.; PhD 1953, Wash. St. Univ. (GF)

HUMMELS, KATHERINE R., Res. Asst. of Biology (1975). BS 1975, Kan. St. Univ.

HUMMER, KAREN K., Asst. Instr. of Chemistry (1983). BS 1982, Kan. St. Univ.

HUNT KRAMER, ROBIN L., Asst. Prof. of Chemistry (1983). PhD 1981, Univ. of Cincinnati.

IANDOLO, JOHN J., Prof. of Biology; Microbiologist, Agr. Exp. Sta. (1967). BS 1961, Loyola Univ., Chicago; MS 1963, PhD 1965, Univ. of Ill. (GF)

IANDOLO, SHARON, Instr. of Sociology (1982). MA 1965, Univ. of Ill.

IKEDA, YOSHIRO, Assoc. Prof. of Art (1978). BS 1970, Portland St. Univ.; Research Art Certificate 1973, Kyota Univ. of Fine Arts; MFA 1977, Univ. of Calif., Santa Barbara

ILES, IVOR VICTOR, Prof. of Political Science Emeritus (1911). BA 1904, MA 1905, Univ. of Kan. (GF)

IMIZU, YUZO, Res. Assoc. of Chemistry (1982). PhD 1979, Hokkaido Univ., Japan.

JACKSON, T. HANLEY, Prof. of Music (1968). BA 1965, San Fernando Valley St. Col.; MA 1968, Calif. St. Col. at Long Beach. (GF)

JACOBS, DAVID S., Adjunct Clinical Assoc. of Med. Tech. (1976). BS 1953, MD 1956, Univ. of Mich.

JENKINS, CAROL A., Asst. Instr. of Sociology (1983). MA 1972, Western Mich. Univ.

JENNINGS, DEAN P., Asst. Instr. of Computer Science (1983). BS 1979, Washburn Univ.

JILKA, JOSEPH M., Res. Asst. of Biochemistry (1982). BS 1979, Marymount Col.

JOHNSON, BARBARA S., Instr. of Biology (1982). PhD 1976, Northwestern Univ.

JOHNSON, DALLAS E., Prof. of Statistics; Consultant, Agr. Exp. Sta. (1975). BS 1960, Kearney St. Col.; MA 1966, Western Mich. Univ.; PhD 1970, Colo. St. Univ. (GF)

JOHNSON, GEORGE DANA, Assoc. Prof. of Chemistry Emeritus (1952). AB 1940, MA 1941, Oberlin Col.; PhD 1946, Univ. of Mich. (GF)

JOHNSON, ROBERT E., Assoc. Prof. of Physical Education, Dance and Leisure Studies (1977). BA 1951, Transylvania Univ.; MA 1969, Georgetown Univ.; PhD 1975, Ohio Univ. (GF)

JOHNSON, TERRELL K., Res. Assoc. of Physics (1979). PhD 1976, Univ. of Tex.-Austin.

JOHNSON, TERRY C., Prof. and Dir. of Biology; Microbiologist, Agr. Exp. Sta. (1977). BS 1958, Hamline Univ.; MS 1961, PhD 1964, Univ. of Minn. (GF)

JOHNSTON, KENNETH GORDON, Prof. of English (1966). BA 1948, Univ. of Calif. at Berkeley; MA 1951, Univ. of Calif. at Los Angeles; PhD 1966, Univ. of Minn. (GF)

JONES, DALE VINCENT, Assoc. Prof. of English Emeritus (1946). BS 1931, MS 1941, Kan. St. Univ. (GF)

JONES, KENNETH W., Prof. of History (1965). AB 1958, MA 1959, PhD 1966, Univ. of Calif. (GF)

KAHLICH, LUKE, Asst. Prof. of Dance (1980). BA 1971, MA 1975, Tex. Tech. Univ.

KAISER, MARVIN, Assoc. Prof. and Head of Social Work (1977). BA 1961, Cardinal Glennon Col.; MA 1963, Kan. St. Univ.; MSW 1977, Univ. of Kan.; PhD 1979, Univ. of Neb. (GF)

KALLAIL, KEN J., Asst. Prof. of Speech Pathology (1982). MA 1976, Wichita St. Univ.; PhD 1981, Univ. of Okla.

KAMMER, ANN E., Assoc. Prof. of Biology (1972). BS 1956, N.Y. St. Col. for Teachers; MS 1958, Univ. of N.H., Durham; PhD 1966, Univ. of Calif., Berkeley. (GF)

KAUFMAN, BURTON I., Prof. of History (1973). BA 1962, Brandeis Univ.; MA 1964, PhD 1966, Rice Univ. (GF)

KAUFMAN, DONALD W., Asst. Prof. of Biology; Wildlife Ecologist, Agr. Exp. Sta. (1980). BS 1965, MS 1967, Fort Hays St. Univ.; PhD 1972, Univ. of Ga. (GF)

KAY, KENNETH G., Prof. of Chemistry (1971). BS 1965, MS 1965, Polytechnic Inst. of Brooklyn; PhD 1970, The Johns Hopkins Univ. (GF)

KAZEMI, MOHAMMAD, Res. Asst. of Biochemistry (1983). PhD 1983, Kan. St. Univ.

KEISER, GEORGE R., Prof. of English (1973). BA 1962, MA 1964, PhD 1971, Lehigh Univ. (GF)

KELLY, PAUL T., Asst. Prof. of Biology; Molecular Biologist, Agr. Exp. Sta. (1978). BS 1970, MS 1972, PhD 1974, Univ. of Colo. (GF)

KEMP, KENNETH E., Prof. of Statistics; Consultant, Agr. Exp. Sta. (1968). BS 1963, MS 1965, PhD 1967, Mich. St. Univ. (GF)

KIEFER, STEPHEN W., Asst. Prof. of Psychology (1982). BA 1973, Washington Univ., St. Louis; MA 1975, PhD 1978, Ariz. St. Univ. (GF)

KILLIAN, PATRICIA G., Instr. in English (1983). BA 1972, Pittsburg St. Univ.

KIPP, JACOB W., Prof. of History (1971). BS 1964, Shippensburg St. Col.; MA 1967, PhD 1970, Pa. St. Univ. (GF)

KIRKENDALL, DON R., Prof. and Head of Physical Education, Dance and Leisure Studies (1976). BS 1963, MS 1965, PhD 1968, Purdue Univ. (GF)

KISSEL, MARY S., Instr. of English (1983). BA 1965, Berea Col.

KLAASSEN, HAROLD E., Assoc. Prof. of Biology; Ichthyologist, Agr. Exp. Sta. (1967). AB 1957, Tabor Col.; MS 1959, Kan. St. Univ.; PhD 1967, Univ. of Wash. (GF)

KLABUNDE, KENNETH J., Prof. and Head of Chemistry (1979). BS 1965, Augustana Col.; PhD 1969, Univ. of Iowa. (GF)

KLINEDINST, JOHN R., Instr. of Military Science (1982).

KLOPFENSTEIN, WILLIAM E., Assoc. Prof. of Biochemistry; Assoc. Biochemist, Agr. Exp. Sta. (1964). BS 1958, MS 1961, PhD 1964, Pa. St. Univ. (GF)

KNAPP, ALAN K., Res. Asst. of Biology (1982). MA 1981, Univ. of Wyoming.

KNIGHT, PATRICK A., Asst. Prof. of Psychology (1980). BS 1976, Mich. St. Univ.; MS 1979, PhD 1980, Purdue Univ. (GF)

KOCH, PAUL D., Asst. Prof. of Economics (1981). BA 1977, Wartburg Col.; PhD 1980, Mich. St. Univ.

KOCH, WILLIAM E., Assoc. Prof. of English Emeritus (1946). BS 1938, N.D. St. Teachers Col.; MS 1949, Kan. St. Univ. (GF)

KOEPPE, OWEN J., Provost; Prof. of Biochemistry (1980). AB 1949, Hope Col.; MS 1951, PhD 1953, Univ. of Ill. (GF)

KOLONOSKY, PATRICIA A., Instr. of English (1983). MA 1977, Kan. St. Univ.

KOLONOSKY, WALTER F., Assoc. Prof. of Modern Languages (1973). BA 1963, Lycoming Col.; MA 1965, Univ. of Pa.; PhD 1972, Univ. of Kan. (GF)

KRAMER, CHARLES LAWRENCE, Prof. of Biology; Mycologist, Agr. Exp. Sta.; Adjunct Prof. of Plant Pathology (1958). AB 1950, MA 1953, PhD 1957, Univ. of Kan. (GF)

KRAMER, KARL J., Prof. of Biochemistry; Research Chemist, Grain Marketing Research Center (1974). BS 1964, Purdue Univ.; PhD 1971, Univ. of Ariz. (Adjunct Appointment) (GF)

KRAMER, VIRGINIA R., Instr. of Modern Languages (1984). PhD 1978, Kan. St. Univ.

KREN, GEORGE M., Prof. of History (1965). BA 1948, Colby Col.; MA 1949, PhD 1960, Univ. of Wis. (GF)

KREN, MARGARETTA H., Asst. Prof. of Art (1976). BS 1966, Univ. of Wis.; MA 1969, Kan. St. Univ.; MFA 1979, Univ. of Iowa.

KROMM, DAVID E., Prof. of Geography (1967). BS 1960, Eastern Mich. Univ.; MA 1964, PhD 1967, Mich. St. Univ. (GF)

KUNDIGER, MARION S., Instr. of Biology (1978). BS 1942, Univ. of Wis.; BS 1964, MS 1970, Kan. St. Univ.

LAMAN, RUSSELL, Asst. Prof. of English Emeritus (1935). BS 1932, Kan. St. Univ.; MA 1933, St. Univ. of Iowa. (GF)

LAMBERT, JACK L., Prof. of Chemistry (1950). AB 1947, MS 1947, Pittsburg St. Univ.; PhD 1950, Okla. St. Univ. (GF)

LANGENKAMP, JERRY REESE, Assoc. Prof. of Music (1970). BM 1953, Univ. of Okla.; MM 1958, DMA 1970, Univ. of Mich. (GF)

LANGFORD, ROY CLINTON, Prof. of Psychology Emeritus (1925). BS 1925, MS 1926, Kan. St. Univ.; PhD 1934, Leland Stanford Jr. Univ. (GF)

LANNING, FRANCIS C., Assoc. Prof. of Chemistry Emeritus (1942). BS 1930, MS 1931, Univ. of Denver; PhD 1936, Univ. of Minn. (GF)

LARMER, OSCAR VANCE, Prof. of Art (1950). BFA 1949, Univ. of Kan.; MFA 1955, Wichita Univ. (GF)

LARSON, LILLIAN C., Asst. Prof. of Speech (1981). AB 1968, Augustana Col.; MA 1971, Western Mich. Univ.; PhD 1981, Indiana Univ.

LASH, MENDEL ELMER, Prof. of Chemistry Emeritus (1922). AB 1920, MS 1922, PhD 1928, Ohio St. Univ. (GF)

LASHBROOK, RALPH RICHARD, Prof. and Head Emeritus, Department of Journalism (1934). BS 1929, Kan. St. Univ.; MS 1942, Univ. of Wis. (GF)

LAU, DAVID, Asst. Prof. of Speech (1983). BA 1975, MA 1978, Western Michigan Univ.; PhD 1983, Southern Ill. Univ.

LAURIE, DAVID R., Asst. Prof. of Physical Education, Dance and Leisure Studies (1968). BS 1963, MS 1966, Kan. St. Univ.; EdD 1974, Okla. St. Univ. (GF)

LAYMAN, MARY B., Instr. of English (1983). MA 1982, Kan. St. Univ.

LEAVENGOOD, LUTHER OMAR, Prof. of Music Emeritus (1945). BM 1929, Univ. of Kan.; MM 1936, Univ. of Mich. (GF)

LECROY, MARY W. H., Instr. of Modern Languages (1984). MA 1971, Emory Univ.

LEE, CHIA-YEN, Res. Assoc. of Biology (1982). PhD 1982, Kan. St. Univ.

LEE, RONALD S., Prof. of Physics (1967). BA 1961, Luther Col.; PhD 1967, Iowa St. Univ. (GF)

LEE, YU-LEE, Prof. of Mathematics (1967). BS 1955, MA 1959, National Taiwan Univ.; PhD 1964, Univ. of Ore. (GF)

LEGG, JAMES C. Prof. of Physics (1967). BS 1958, Ind. Univ.; MA 1960, PhD 1962, Princeton Univ. (GF)

LEGG, MARILYN R., Res. Asst. of Sociology (1983). PhD 1981, Kan. St. Univ.

LENHERT, ANNE G., Asst. Prof. of Chemistry (1967). BA 1958, Hollins Col.; MS 1963, PhD 1965, The Univ. of N.M.

LEWIS, CHARLES R., Instr. of Sociology (1983). MA 1979, Univ. of Hawaii.

LIN, CHII-DONG, Assoc. Prof. of Physics (1976). BA 1969, Natl. Taiwan Univ.; MS 1970, PhD 1974, Univ. of Chicago.

LIN, SHAW-TAO, Res. Assoc. of Chemistry (1982). PhD 1982, Univ. of Ark.

LINDER, ROBERT D., Prof. of History (1965). BS 1956, Emporia St. Univ.; MDiv, MRE 1958, Central Baptist Theological Seminary; MA 1960, PhD 1963, Univ. of Iowa. (GF)

LINDLEY, DONALD D., Assoc. Prof. of Physical Education, Dance and Leisure Studies (1973). BA 1949, Wichita St. Univ.; MEd 1952, Univ. of Minn.; DEd 1970, Univ. of Ore. (GF)

LINFORD, ORMA, Assoc. Prof. of Political Science (1966). BS 1956, Utah St. Univ.; MS 1958, PhD 1964, Univ. of Wis. (GF)

LOCKHART, CHARLES HOWARD, Assoc. Prof. of Biology Emeritus (1940). BS 1934, MS 1938, Kan. St. Univ. (GF)

LONG, GLENN WESLEY, Asst. Prof. of Sociology Emeritus (1938). AB 1926, Baker Univ.; MS 1940, Kan. St. Univ. (GF)

LONG, JOANN, Adjunct Clinical Instr. (1979). BS 1974, Central Mo. St.

LOVE, JUDITH, Asst. Prof. of Art (1970). A of A 1961, Cottey Col.; BFA 1964, K.C. Art Inst.; MFA 1969, Univ. of Neb.

LUVALLE, MICHAEL J., Asst. Prof. of Statistics (1983). PhD 1983, Univ. of Calif.

LYNN, NAOMI B., Prof. and Head of Political Science (1970). BA 1954, Maryville Col.; MA 1958, Univ. of Ill.; PhD 1970, Univ. of Kan. (GF)

MAATTA, ERIC A., Asst. Prof. of Chemistry (1981). BS 1974, Carnegie-Mellon Univ.; PhD 1980, Indiana Univ. (GF)

MACDONOUGH, TOMI S., Assoc. Prof. of Psychology (1983). PhD 1972, Univ. of Ga.

MACFARLAND, CHARLOTTE, Instr. of Speech (1978). BA 1968, MA 1969, Univ. of Wis.

MACFARLAND, DAVID T., Assoc. Prof. of Journalism and Mass Communications (1972). BA 1965, MA 1966, Stetson Univ.; PhD 1972, Univ. of Wis. (GF)

MACOMBER, DAVID W., Asst. Prof. of Chemistry (1983). PhD 1982, Univ. of Mass. (GF)

MACY, ELBERT B., Assoc. Prof. of Journalism Emeritus (1946). BS 1930, MS 1939, Kan. St. Univ.

MAGGART, ROGER H., Instr. of Statistics (1983). MS 1977, Miami Univ.

MANNEY, THOMAS R., Prof. of Physics (1971). BA 1958, Western Wash. St. Col.; PhD 1964, Univ. of Calif. (GF)

MANNING, DAVID R., Res. Asst. of Biochemistry (1979). BS 1979, Kan. St. Univ.

MARCHIN, GEORGE L., Assoc. Prof. of Biology; Microbiologist, Agr. Exp. Sta. (1970). BA 1962, Rockhurst Col.; PhD 1967, Univ. of Kan. (GF)

MARR, JOHN M., Prof. of Mathematics (1953). BS 1941, Central Mo. St. Col.; MA 1948, Univ. of Mo.; PhD 1953, Univ. of Tenn. (GF)

MARSH, HARRY D., Prof. and Head of Journalism and Mass Communications (1980). BA 1949, Baylor Univ.; BS 1957, Columbia Univ.; PhD 1974, Univ. of Tex.

MARYMOUNT, JESSE H., Adjunct Clinical Assoc. of Med. Tech. (1976). BS 1950, Syracuse Univ.; MD 1954, St. Univ. of N.Y. at Syracuse.

MARZOLF, G. RICHARD, Prof. of Biology; Limnologist, Agr. Exp. Sta. (1962). AB 1957, Wittenberg Univ.; PhD 1962, Univ. of Mich. (GF)

McBRIDE, RICHARD A., Asst. Prof. of Computer Science (1981). BA 1968, Univ. of Colo.; MS 1974, Southern Ill. Univ.; PhD 1980, Kan. St. Univ.

McCANN, DON B., Prof. and Head of Military Science (1982). BA 1972, Kan. St. Univ.; MA 1976, Fla. Institute of Technology.

McCARTHY, PAUL E., Prof. of English (1967). BA 1948, MFA 1951, St. Univ. of Iowa; PhD 1962, Univ. of Tex. (GF)

McCRACKEN, ELIZABETH UNGER, Assoc. Prof. of Biology Emerita (1938). AB 1929, MA 1932, Wellesley Col.; PhD 1937, Univ of Calif. (GF)

McCULLOH, JOHN M., Assoc. Prof. of History (1973). BA 1965, Kan. Univ.; MA 1966, PhD 1971, Univ. of Calif., Berkeley. (GF)

McDONALD, RICHARD N., Prof. of Chemistry (1960). BS 1954, MS 1955, Wayne St. Univ.; PhD 1956, Univ. of Wash. (GF)

McELROY, MARY A., Assoc. Prof. of Physical Education, Dance and Leisure Studies (1978). BA 1974, Queens Col., N.Y.; MA 1975, Ohio St. Univ.; PhD 1978, Univ. of Md. (GF)

McGHEE, RICHARD D., Prof. of English (1967). BA 1962, Univ. of Mo. at K.C.; MA 1964, PhD 1967, Univ. of Okla. (GF)

McGILL, SHIRLEY M., Res. Asst. of Biology (1980). BS 1967, Emporia St. Univ.

McGRAW, BETTY R., Assoc. Prof. of Modern Languages (1963). Licence es Lettres 1961, Universite de Paris. (GF)

McGUIRE, JAMES H., Assoc. Prof. of Physics (1972). BS 1964, Rensselaer Polytechnic Inst.; MS 1966, PhD 1969, Northeastern Univ. (GF)

McKINNEY, KATHERYN ANN, Assoc. Prof. of Physical Education, Dance and Leisure Studies Emerita (1946). BS 1934, Kan. St. Univ.; MA 1935, George Peabody Col. for Teachers. (GF)

MELOAN, CLIFTON E., Prof. of Chemistry (1959). BS 1953, Iowa St. Univ.; PhD 1959, Purdue Univ. (GF)

MENDENHALL, BURNEY L., Asst. Prof. of Modern Languages (1965). BA 1950, Washburn Univ.; MS 1953, Emporia St. Univ.; PhD 1964, Univ. of Kan. (GF)

METZLER, CHRISTINE I., Res. Asst. of Psychology (1983). MA 1979, Villanova Univ.

MICHIE, ARUNA NAYYAR, Asst. Prof. of Political Science (1976). AB 1966, Smith Col.; MA 1969, PhD 1975, Mich. St. Univ. (GF)

MILBOURN, MAX W., Assoc. Prof. of Journalism and Mass Communications (1949). AB 1938, Univ. of Wichita.

MILEY, JAMES D., Asst. Prof. of Sociology (1970). BA 1959, Millsaps Col.; MA 1963, La. St. Univ.; PhD 1970, Tulane Univ. (GF)

MILLER, CAROL LYNN, Asst. Prof. of Modern Languages (1968). BA 1958, MA 1959, Vanderbilt Univ.; PhD 1963, Washington Univ. (GF)

MILLER, CECIL H., Prof. of Philosophy Emeritus (1945). AB 1930, Univ. of Kan.; MA 1939, Univ. of Calif. (GF)

MILLER, FORREST R., Assoc. Prof. of Mathematics (1968). BS 1962, Univ. of Okla.; MA 1965, PhD 1968, Univ. of Mass. (GF)

MILLER, HELEN J., Instr. of Speech (1982). MA 1978, Kan. St. Univ.

MILLER, MICHAEL H., Assoc. Dir. Computing Center; Asst. Prof. of Computer Science, (1960). BS 1958, MS 1960, Iowa St. Univ.

MILLER, SUSAN E., Asst. Prof. of Physical Education, Dance and Leisure Studies (1978). BA 1962, MS 1964, Univ. of Wash.; PhD 1978, Mich. St. Univ. (GF)

MILLIKEN, GEORGE A., Prof. of Statistics; Consultant, Agr. Exp. Sta. (1969). BS 1965, MS 1968, PhD 1969, Colo. St. Univ. (GF)

MITCHELL, HOWARD LEE, Prof. of Biochemistry Emeritus (1946). BS 1938, Okla. St. Univ.; PhD 1946, Purdue Univ. (GF)

MITCHELL, JAMES C., Prof. of Psychology (1966). BS 1957, MA 1959, PhD 1962, Ohio St. Univ. (GF)

MITCHELL, LINDA R., Instr.; Advisor, College of Arts and Sciences (1982). MA 1981, Kan. St. Univ.

MOLINEUX, BARRY R., Instr. of Speech (1970). BS 1966, MA 1968, Kan. St. Univ.

MOORE, FRITZ, Prof. of Modern Languages Emeritus (1934). AB 1927, Univ. of Akron; MA 1930, PhD 1932, Univ. of Ill. (GF)

MOORE, HUGH C., Adjunct Clinical Assoc. of Med. Tech. (1979). BS 1955, Tex. Christian; MD 1959, Univ. of Tex.

MORNINGSTAR, WILLIAM S., Instr. of Sociology (1982). MA 1979, W. Va. Univ.

MORRIS, JIM R., Assoc. Prof. of Journalism and Mass Communications (1968). AA 1957, Kilgore Col.; BJourn. 1959, Univ. of Tex.; MA 1964, Univ. of Ga.; EdD 1969, North Tex. St. Univ. (GF)

MOSER, HERBERT CHARLES, Prof. of Chemistry (1957). BA 1952, San Jose St. Univ.; PhD 1957, Iowa St. Univ. (GF)

MOSES, WILLIAM R., Prof. of English Emeritus (1950). BA 1932, MA 1933, PhD 1939, Vanderbilt Univ. (GF)

MOSHER, ROBIN A., Instr. of English (1983). MA 1983, Kan. St. Univ.

MOSSMAN, THIRZA ADELINE, Assoc. Prof. of Mathematics Emerita (1922). BA 1916, Univ. of Neb.; MA 1922, Univ. of Chicago. (GF)

MOUILLE, CHERYL D., Instr. of Physical Education, Dance and Leisure Studies (1982). MA 1983, Univ. of Kan.

MROZEK, DONALD J., Prof. of History (1972). BA 1966, Georgetown Univ.; MA 1968, PhD 1972, Rutgers Univ. (GF)

MUELLER, DELBERT D., Assoc. Prof. of Biochemistry; Assoc. Biochemist, Agr. Exp. Sta. (1968). BS 1962, PhD 1966, Univ. of Okla. (GF)

MUENZENBERGER, THOMAS B., Assoc. Prof. of Mathematics (1976). BS 1965, MS 1967, Univ. of Fla., PhD 1972, Univ. of Wyo. (GF)

MULLIN, ROBERT E., Instr. of English (1983). MA 1975, Emporia St. Univ.

MUNCE, JAMES C., Assoc. Prof. of Art (1972). BFA 1966, Minneapolis School of Art; MFA 1971, Ind. Univ. (GF)

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NAFZIGER, ESTEL WAYNE, Prof. of Economics (1966). BA 1960, Goshen Col.; MA 1962, Univ. of Mich.; PhD 1967, Univ. of Ill. (GF)

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NASH, SHERRIE L., Res. Asst. of Biology (1983). BS 1981, Va. Polytechnic Institute and St. Univ.

NASSAR, RAJA F., Prof. of Statistics (1966). BS 1958, American Univ., Beirut, Lebanon; MS 1960, Univ. of Idaho; PhD 1963, Univ. of Calif., Davis. (GF)

NELLIS, M. DUANE, Asst. Prof. of Geography (1980). BS 1976, Mont. St. Univ.; MS 1977, PhD 1980, Ore. St. Univ. (GF)

NELSON, BONNIE A., Asst. Prof. of English (1983). BA 1965, City Col. of N.Y.; MAT 1967, City Univ. of N.Y.; PhD 1981, Penn. St. Univ. (GF)

NELSON, PAUL I., Instr. of Statistics (1983). PhD 1969, Rutgers Univ.

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NEWCOMB, MARGARET ALICE, Assoc. Prof. of Biology Emerita (1925). BS 1925, MS 1927, Kan. St. Univ. (GF)

NEWELL-COOK, PHYLLIS A., Instr. of Speech (1982). MA 1976, Boston Col.

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NOONAN, JOHN P., Assoc. Dean of Graduate School; Prof. of English (1947). BS 1947, Rockhurst Col.; MS 1950, Kan. St. Univ.; PhD 1955, Denver Univ. (GF)

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O'BRIEN, PATRICIA J., Prof. of Anthropology (1967). BA 1962, BMA 1966, PhD 1969, Univ. of Ill. (GF)

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O'NEIL, MICHAEL P., Asst. Prof. of Philosophy (1973). BA 1965, MA 1966, Miami Univ.; PhD 1972, Univ. of Edinburgh, Scotland.

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RULIFFSON, WILLARD S., Prof. of Biochemistry (1953). BS 1940, Buena Vista Col.; PhD 1953, Univ. of Iowa. (GF)

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SABOURIN, THIERRY, Res. Assoc. of Physics (1983). MS 1983, Univ. of Bordeaux, France.

SAEKI, SADAHIRO, Prof. of Mathematics (1982). BS 1965, Waseda Univ.; MS 1967, PhD 1970, Tokyo Met. Univ., Japan (GF)

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SCHANKER, LYNN S., Asst. Instr. of Biology (1983). MS 1982, Kan. St. Univ.

SCHEER, RICHARD K., Assoc. Prof. of Philosophy (1968). AB 1950, Univ. of Neb.; MA 1951, Univ. of Fla.; PhD 1958, Univ. of Neb. (GF)

SCHENCK-HAMLIN, WILLIAM, Assoc. Prof. of Speech (1976). BA 1968, Kan. St. Univ.; PhD 1976, Univ. of Okla.

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SCHNEIDER, HAROLD WILLIAM, Asst. Prof. of English (1961). BA 1950, Univ. of Minn.

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SCHENCK-HAMLIN, WILLIAM J., Assoc. Prof. of Speech (1976). BS 1969, MA 1971, Kan. St. Univ.; PhD 1976, Univ. of Ore. (GF)

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SETSER, DONALD W., Prof. of Chemistry (1963). BS 1956, MS 1958, Kan. St. Univ.; PhD 1961, Univ. of Wash. (GF)

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TAYLOR, THOMAS W., Res. Assoc. of Physics (1983). PhD 1983, Okla. St. Univ.

TERRY, RHONDA G., Asst. Instr. of Computer Science (1976). BS 1974, Brigham Young Univ.

TERRY, ROGER V., Asst. Prof. of Computer Science (1981). BS 1976, BYU; MS 1979, PhD 1981, Kan. St. Univ.

THOMAS, LLOYD B., JR., Assoc. Prof. and Asst. Head of Economics (1968). BA 1963, MA 1964, Univ. of Mo.; PhD 1970, Northwestern Univ. (GF)

THOMPSON, CHARLES P., Prof. of Psychology (1965). BS 1958, Wis. St. Col.; MS 1960, PhD 1962, Univ. of Wis. (GF)

TILGHMAN, BENJAMIN R., Prof. of Philosophy (1967). AB 1950, MA 1954, Wash. Univ.; PhD 1959, Univ. of Wash. (GF)

TOMB, A. SPENCER, Assoc. Prof. of Biology; Botanist, Agr. Exp. Sta. (1974). BS 1966, Univ. of the South; PhD 1970, Univ. of Tex., Austin. (GF)

TREMBLAY, VICTOR J., Asst. Prof. of Economics (1983). BA 1973, Univ. of Calif.-Los Angeles; MA 1977, Calif. St. Univ.-Northridge; PhD Wash. St. Univ.

TRENARY, ROGER C., Instr. of Economics (1983). BA 1968, MA 1972, Wayne St. Univ.

TROTT, GARY J., Res. Assoc. of Physics (1982). PhD 1981, Univ. of Miss.

TUNSTALL, GEORGE C., Assoc. Prof. of Modern Languages (1973). BA 1964, Hamilton Col.; MA 1966, PhD 1968, Princeton Univ. (GF)

TWISS, NANCY, Advisor; Dean, Arts and Sciences office (1968). BA 1954, Colo. Col.; MS 1974, Kan. St. Univ.

TWISS, PAGE CHARLES, Prof. of Geology (1953). BS 1950, MS 1955, Kan. St. Univ.; PhD 1959, Univ. of Tex., Austin. (GF)

UHLARIK, JOHN JEFFERY, Prof. of Psychology (1970). BS 1965, Univ. of Wis.; MS 1967, PhD 1970, Univ. of Wash. (GF)

UNDERWOOD, JAMES R., JR., Prof. and Head of Geology (1977). BS 1948, 1949, MA 1956, PhD 1962, Univ. of Tex., Austin. (GF)

UNEKIS, JOSEPH K., Asst. Prof. of Political Science (1977). BS 1963, Eastern Ill. Univ.; MA 1972, PhD 1977, Ind. Univ. (GF)

UNGER, ELIZABETH A., Prof. of Computer Science (1966). BS 1961, MS 1963, Mich. St. Univ.; PhD 1978, Univ. of Kan. (GF)

URBAN, JAMES E., Assoc. Prof. of Biology (1970). BA 1965, PhD 1968, Univ. of Tex. (GF)

UTHOFF, JOHN S., Assoc. Prof. of Speech (1976). BA 1968, MFA 1973, Univ. of Iowa.

VAN SWAAY, MAARTEN, Assoc. Prof. of Computer Science (1963). BBS 1951, 'Drs' 1956, Leiden Univ., Netherlands; PhD 1956, Princeton Univ. (GF)

VOGT, JOHN L., Assoc. Prof. of Art (1963). BFA 1960, Kan. City Art Inst.; MFA 1963, Univ. of Ill. (GF)

VOVK, FRANK, Instr. of Military Science (1973).

WALKER, MARGARET Y., Asst. Prof. of Music (1971). BM 1970, Kan. St. Univ., MM 1974, Tex. Christian Univ. (GF)

WALKER, RODNEY G., Assoc. Prof. of Music (1966). BME 1959, Univ. of Neb.; MME 1961, Wichita St. Univ. (GF)

WALKER, WARREN VINCENT, Prof. of Music (1948). BA 1946, Univ. of Wash.; MM 1948, Cincinnati Conservatory of Music. (GF)

WALLENTINE, VIRGIL E., Prof. and Head of Computer Science (1972). BS 1965, MS 1970, PhD 1972, Iowa St. Univ. (GF)

WALTERS, CHARLES P., Prof. of Geology (1936). BS 1936, MS 1937, Kan. St. Univ.; PhD 1957, Cornell Univ. (GF)

WARD, JAMES D., Asst. Prof. of Sociology (1978). BA 1967, Marshall Univ.; MSW 1970, W. Va. Univ.

WARD, SUSAN I., Res. Asst. of Biochemistry (1981). BS 1980, Kan. St. Univ.

WARREN, ANN A., Instr. of English (1977). BA 1964, Fla. Southern Col.; MA 1968, Univ. of Ga.

WARREN, JOHN T., Instr. of Physics (1983). PhD 1971, Univ. of Ill.

WARREN, LELAND E., Assoc. Prof. of English (1976). BA 1966, Emory Univ.; MA 1968, Univ. of Ga.; PhD 1976, Univ. of Ill. (GF)

WATT, STEPHEN B., Asst. Instr. of Mathematics (1983). PhD 1983, Univ. of Ill.

WAUGH, WILLIAM L., JR., Asst. Prof. of Political Science (1982). AB 1973, Univ. of No. Ala.; MA 1976, Auburn Univ.; PhD 1980, Univ. of Miss. (GF)

WAUTHIER, RAYMOND AUGUST, Assoc. Prof. of Physical Education, Dance and Leisure Studies (1949). BS 1945, Albion Col.; MS 1947, Drake Univ. (GF)

WEAVER, OLIVER LAURENCE, Assoc. Prof. of Physics (1970). BS 1965, Calif. Inst. of Tech.; PhD 1970, Duke Univ. (GF)

WEINMAN, G. MARIAN, Instr. of English (1983). MA 1961, Univ. of Ga.

WEIS, JERRY S., Assoc. Prof. of Biology (1966). AB 1958, Kan. Wesleyan Univ.; MA 1960, PhD 1964, Univ. of Kan. (GF)

WEISKOPH, RONALD W., Asst. Prof. of Military Science (1981). BS 1960, Univ. of Mo.; MS 1963, Southern Ill. Univ.

WEN, LISA, Res. Asst. of Biochemistry (1983). PhD 1983, Kan. St. Univ.

WEST, RONALD R., Prof. of Geology (1969). AA 1955, Centralia Jr. Col.; BS 1958, Univ. of Mo. at Rolla; MS 1962, Univ. of Kan.; PhD 1970, Univ. of Okla. (GF)

WESTBY, LINDA S., Instr. of Physical Education, Dance and Leisure Studies (1983). BFA 1981, MFA 1983, Univ. of Utah.

WEYERTS, ALFRED C., Instr. of Chemistry (1963). BS 1948, Denver Univ.

WHETZEL, STEVEN Z., Res. Asst. of Biology (1981). BS 1981, Univ. of Wis.

WHITE, CHAPPELL, Prof. of Music (1974). BA 1940, Emory Univ.; BM 1947, Westminster Choir Col.; PhD 1957, Princeton Univ. (GF)

WHITE, STEPHEN E., Assoc. Prof. and Head of Geography (1975). BA 1969, MA 1972, PhD 1974, Univ. of Ky. (GF)

WHITESIDE, JANET D., Instr. of Speech (1984). PhD 1982, Ind. Univ.

WIGGINS, BRENDA P., Instr. of Physical Education, Dance and Leisure Studies (1982). MA 1981, San Diego St. Univ.

WIGGINS, DAVID K., Assoc. Prof. of Physical Education, Dance and Leisure Studies (1979). AB 1974, MA 1975, San Diego St. Univ., PhD 1979, Univ. of Md. (GF)

WILCOX, ANTHONY R., Asst. Prof. of Physical Education, Dance and Leisure Studies (1980). BA 1973, MS 1979, PhD 1980, Univ. of Mass. (GF)

WILCOXON, GEORGE DENT, Prof. of History (1946). AB 1936, MA 1938, PhD 1941, Univ. of Calif. at Los Angeles. (GF)

WILEY, RUEL D., Instr. of Sociology (1982). MA 1980, Univ. of Tex.

WILLIAMS, CAROL A., Res. Asst. of History (1974). BA 1965, Univ. of Ill.

WILLIAMS, DUDLEY, Distinguished Regents Prof. of Physics Emeritus (1964). AB 1933, MA 1934, PhD 1936, Univ. of N.C. (GF)

WILLIAMS, KATHLEEN, Asst. Prof. of Physical Education, Dance and Leisure Studies (1984). BS 1974, Univ. of N.C.; MA 1979, PhD 1982, Univ. of Wis.-Madison.

WILLIAMS, LARRY G., Asst. Prof. of Biology (1970). BS 1961, MS 1963, Univ. of Neb.; PhD 1968, Calif. Inst. of Tech. (GF)

WILLIAMS, TIMOTHY ALDEN, Prof. of Political Science (1967). AB 1954, Davidson Col.; PhD 1964, Univ. of N.C. (GF)

WILLIS, LINDEN G., Asst. Prof. of Mathematics (1984). BS 1978, Kan. St. Univ.; MS 1980, Univ. of Ore.

WILSON, FRED E., Assoc. Prof. of Biology (1965). AB 1958, MA 1960, Univ. of Kan.; PhD 1965, Wash. St. Univ. (GF)

WILSON, NORMA E., Instr. of English (1983). MA 1983, Univ. of Kan.

WIMMER, EDWARD JOSEPH, Prof. of Biology Emeritus (1928). AB 1925, MA 1927, PhD 1928, Univ. of Wis. (GF)

WINEGARDNER, CARROLL, Asst. Prof. of Art (1966). BFA 1960, Kan. City Art Inst.; MFA 1963, Univ. of Okla.

WINKLER, MELISSA A., Instr. of Sociology (1982). BA 1980, Kan. St. Univ.

WINKLER, RALPH, Asst. Prof. of Music (1981). BM 1960, Artist's Dip. 1961, Univ. of Rochester.

WOHLERS, H. DAVID, Asst. Prof. of Chemistry (1983). BS 1975, Univ. of Iowa.

WOLDT, GRACE S., Instr. of Mathematics Emerita (1946). AB 1927, Ohio Wesleyan Univ.

WONG, CHAK PAN, Res. Assoc. of Physics (1983). PhD 1981, Univ. of Manitoba, Canada.

WONG, PETER P., Assoc. Prof. of Biology; Plant Physiologist, Agr. Exp. Sta. (1976). BS 1966, Calif. St. Univ.; BA 1967, PhD 1971, Ore. St. Univ. (GF)

WOODWARD, GARY L., Assoc. Prof. of Art (1971). AB 1961, Northern Colo. Univ.; MA 1964, Univ. of Iowa; MFA 1969, Univ. of Wash.

WORTHINGTON, NANCY E., Instr. of Modern Languages (1983). BA 1967, Univ. of Colo.

YANG, SHIE-SHIEN, Asst. Prof. of Statistics (1979). BS 1969, MS 1974, PhD 1976, Iowa St. Univ. (GF)

YEE, KANE, Prof. of Mathematics (1968). BS 1957, MS 1958, PhD 1963, Univ. of Calif. at Berkeley. (GF)

YOOD, BERTRAM, Visiting Prof. of Mathematics (1984). BS 1938, Yale Univ.; MS 1939, Calif. Institute of Technology; PhD 1947, Yale Univ.

YOUNG, MICHAEL W., Instr. of English (1983). PhD 1983, Kan. St. Univ.

YOUNG, PAUL M., Prof. of Mathematics (1970). AB 1937, Miami Univ.; MA 1939, PhD 1941, Ohio St. Univ. (GF)

ZIMMERMAN, JOHN L., Prof. of Biology (1963). BS 1953, MS 1958, Mich. St. Univ.; PhD 1963, Univ. of Ill. (GF)

ZOLLMAN, DEAN ALVIN, Prof. of Physics (1970). BS 1964, MS 1965, Ind. Univ.; PhD 1970, Univ. of Md. (GF)

ZSCHOCHE, SUE, Instr. of History (1983). MA 1978, Univ. of Kan.

Arts and Sciences

William L. Stamey, dean
William E. Carpenter, associate dean
Kent Cartwright, assistant dean
Marjorie Cleland, assistant to the dean

117 Eisenhower Hall
532-6900

The College of Arts and Sciences is the home of the liberal arts and is the largest college at Kansas State University. The liberal arts, which include the physical and biological sciences, the fine arts, the social sciences, the humanities, and the quantitative diseiplines, embody the core studies of a university education.

The liberal arts seek to develop intellectual skills, such as critical analysis, self-expression, and creativity. Majors in the College of Arts and Sciences range from those related to speeific jobs and professions to those related to vocation in a more general and perhaps more fundamental way.

Advising

Students with undeclared, interdisciplinary, and pre-professional majors are advised in the office of the dean. Students with other majors are assigned an advisor by the department head who supervises the majors. In all cases, advisors try to ensure that students design their curricula to meet such goals as: the ability to think, speak, and write with clarity and precision; knowledge of another culture or another language; knowledge and appreciation of science and technology; familiarity with major artistie and literary forms; and exposure to moral and ethical issues.

For those who are uncertain about their majors, or who would prefer to explore a number of academic areas before making a choiee, the College of Arts and Sciences provides a general (or undeclared) eurriculum. Undeclared majors work with dean's office advisors to devise programs that satisfy basic degree requirements while exploring personal interests and aptitudes before choosing majors.

It is expected that students will declare a major by the end of the sophomore year, or upon completion of 60 credit hours.

Majors and degrees

The undergraduate degrees offered in the College of Arts and Sciences are: bachelor of arts, Bachelor of Fine Arts, Bachelor of Music Education, and bachelor of science. In addition to these degrees, the Associate of Arts and the Associate of Seience degrees with unspecified majors are offered.

Below in the left column are specific majors, options, advising programs, and degrees offered. In the right column are names of the departments under which the major programs are offered. The speeific requirements for a degree in the various eurrieula may be found in the department listings later in the College of Arts and Sciences eatalog section.

Anthropology, B.A. or B.S.	Sociology, anthropology and social work
Art, B.A. or B.F.A.	Art
Biochemistry, B.A. or B.S.	Biochemistry
Biology, B.A. or B.S.	Biology
Chemical science, B.A. or B.S.	Chemistry
Chemistry, B.A. or B.S.	Chemistry
Computer science, B.A. or B.S.	Computer science

Correctional administration, B.A. or B.S.	Sociology, anthropology and social work
Dance, B.A. or B.S.	Physical education, dance and leisure studies
Economics, B.A. or B.S.	Economics
English, B.A	English
Literature	
Creative writing	
Teaching certification	
Fisheries and wildlife biology, B.A. or B.S.	Biology
Fisheries biology	
Wildlife biology	
General	
General (advising program)	Dean's office
Geography, B.A. or B.S.	Geography
General	
Pre-planning	
Geology, B.A. or B.S.	Geology
Geophysics, B.A. or B.S.	Geology
History, B.A. or B.S.	History
Information systems, B.A. or B.S.	Computer science
Interdisciplinary	Dean's office
Humanities, B.A.	
Life science, B.A. or B.S.	
Physical science, B.A. or B.S.	
Social science, B.A. or B.S.	
Journalism and mass communications, B.A. or B.S.	Journalism and mass communications
News editing	
Public relations	
Advertising	
Magazine	
General	
Leisure studies, B.A. or B.S.	Physical education, dance and leisure studies
Mathematics, B.A. or B.S.	Mathematics
Medical technology, B.A. or B.S.	Dean's office
Microbiology, B.A. or B.S.	Biology
Modern languages, B.A.	Modern languages
Music, B.A.	Music
Music education, B.M.E.	Music
Music, applied, B.M.	Music
Philosophy	Philosophy
Traditional, B.A.	
Pre-business, B.A. or B.S.	
Pre-law, B.A. or B.S.	
Pre-ministry, B.A.	
Interdisciplinary, B.A. or B.S.	
Physical education, B.A. or B.S.	Physical education, dance and leisure studies
Human movement	
Exercise science	
Elementary	
Secondary	
Physics, B.A. or B.S.	Physics
Political science, B.A. or B.S.	Political science
General	
Public administration	
Pre-dentistry, B.A. or B.S.	Dean's office
Pre-law, (advising program)	Dean's office
Pre-medicine, B.A. or B.S.	Dean's office
Pre-nursing, (advising program)	Dean's office
Pre-optometry, (advising program)	Dean's office
Pre-pharmacy, (advising program)	Dean's office
Pre-physical therapy, (advising program)	Dean's office
Pre-veterinary medicine,* (advising program)	Dean's office
Psychology, B.A. or B.S.	Psychology
Radio-Television, B.A. or B.S.	Journalism and mass communications
Social Work, B.A. or B.S.	Sociology, anthropology and social work
Sociology, B.A. or B.S.	Sociology, anthropology and social work
Speech, B.A. or B.S.	Speech
General	
Linguistics	
Speech Pathology, B.A. or B.S.	Speech
Statistics, B.A. or B.S.	Statistics
Theatre, B.A. or B.S.	Speech

Secondary majors
Secondary majors are those majors which can be taken only in addition to the primary majors listed above. The secondary majors in the college are: Gerontological Studies, International Studies, Latin American Studies, South Asia Studies, and Women's Studies.

* Students who complete pre-veterinary medicine requirements in the College of Arts and Sciences will be eligible for the bachelor of science degree from the College of Arts and Sciences upon completion of the second professional year in the College of Veterinary Medicine.

General Requirements

General education requirements

Requirements in general education are to be fulfilled by courses chosen by students in consultation with their advisors. The aim of these requirements is to provide breadth in the major areas of knowledge outside the field of specialization. Introductory- and intermediate-level courses are available for this purpose in departments in the areas of natural sciences, social sciences, and humanities. *Courses numbered below one hundred (100) may not be applied toward a degree.*

General education requirements
Bachelor of arts, bachelor of science degrees
Requirements common to the B.A. and B.S. degrees

120 credit hours required for graduation

Physical Education
Purpose: to give a foundation in the principles of physical exercise and fitness

PE 101	Concepts in Physical Education	1

Basic rhetoric
(3 courses, 8 credit hours minimum)
Purpose: to give students practice in writing and analyzing expository and argumentative prose and in oral presentation

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
	or*	
SPCH 125	Argumentation & Debate	3
	or*	
SPCH 321	Public Speaking	3

*as recommended by Department of Speech

A major
Satisfaction of requirements for any of the majors in the College of Arts and Sciences (see list earlier in this section). With careful scheduling, it is possible to complete an additional major, a secondary major, or pre-professional requirements, as well.
Purpose: to ensure some depth and detail in at least one field of knowledge

Basic subject matter disciplines
Purpose: The aim of the requirement in the humanities is to encourage and to enable students to recover "a heritage so important that to lose it would be to lose the very qualities that make men and women greater than the systems they devise and mark the difference between a society of robots and a community of civilized human beings." The aim of the requirement in the sciences is to ensure that students gain an immediate acquaintance with the general principles of scientific method and with the different shapes the scientific enterprise takes in the physical sciences, the life sciences, and the social sciences.

Up to two courses from one department may be used to fulfill the distribution requirements for humanities and the social sciences. They may be used at the same time to count towards the student's major. No course may be used to satisfy more than one specific requirement for humanities and social sciences. Only courses taken for 2 or more credit hours satisfy these requirements; courses in excess of 5 credit hours count as two courses.

Humanities (4 courses, 1 course each section, 11 credit hours minimum)
Fine arts (1 course—visual arts, music, dance, theatre)
Purpose: to ensure some interpretive or expressive competence in a traditional non-literary mode of artistic expression

Choose from the following:
Art history—any course
Art technique—200 level or above
Dance—DANCE 205, 323, 324, 325, or 326
History—HIST 459
Music—MUSIC 175 or 176
Music history and literature—200 level or above
Applied music—MUSIC 252 or above
Theatre—THTRE 260 or above

Philosophy (1 course)
Purpose: to ensure some interpretive or expressive competence in the fundamental conceptual issues of human thought and activity

Choose any philosophy course except PHILO 110, 220, 310, or 510

Western heritage (1 course)
Purpose: to ensure some interpretive or expressive competence regarding the institutions, traditions, and values that have shaped Western civilization

Choose from the following:
General—courses dealing with the Greco-Roman, Western European, or North American experience
Constitutional law—POLSC 713, 714, 715, 716, or 799
Women's studies—Women's Studies xxx 105 or 405
Political thought—POLSC 301, 761, 763, 767, 771, or 775
Western humanities—ENGL 230, 231, 233, or 234
Foreign civilizations—FREN 514, GRMN 530, SPAN 565, or SPAN 566

Literary or rhetorical arts (1 course, literature or creative writing)
Purpose: to ensure some interpretive or expressive competence in a traditional literary or rhetorical mode of artistic expression

Choose from the following:
English—any course except ENGL 220 or 520
Modern languages—any course
Theatre—THTRE 562, 764, 770, 771, 772, 773, 774, or 776
History of rhetoric—SPCH 330, 725, 730, 731, or 732

Exception: Students in B.S. programs who take two courses in one foreign language may use these to satisfy the requirements for Western heritage and for literary and rhetorical arts.

Social sciences
(4 courses, 12 credit hours minimum, from 3 disciplines. One course must be at 500 level or above, or carry a prerequisite in the same department.)
Purpose: to acquaint the student with the adaptation of scientific method to the analysis of human social systems

Three of the four courses must be from these areas:
Psychology—any course
Sociology—any course
Cultural anthropology—including archaeology
Geography—except GEOG 220 or 221
Economics—any course
Political science—any course
History—any course

The fourth course must be from the above areas or from:
Women's studies—Women's Studies xxx 105 or 405
Linguistics—except LG 681
Speech—SPCH 520, 721, or 726
Journalism and mass communications—JMC 235, 645, 660, 665, or 685, or RTV 660 or 675

Natural sciences
(3 courses, 11 credit hours minimum)
Life sciences (1 course with laboratory)
Purpose: to introduce students to the systematic study of organisms and their interrelationships

Choose from the following:
Biology—any course
Biochemistry—any course
Paleobiology—GEOL 580, 581, or 704
Physical anthropology—ANTH 280, 281, 688, 691, 694, or 695

Physical sciences (1 course with laboratory)
Purpose: to introduce students to the appropriate attitudes and methods which characterize the systematic study of matter and energy

Choose from the following:
Physics—any course
Chemistry—any course
Environmental geography—GEOG 220 or 221
Geology—any course except GEOL 580, 581, or 704

Additional natural science course:
Any one course selected from life sciences or physical sciences lists above

International studies overlay (1 course)
Purpose: to equip students better to become citizens of a world where the most important problems are unavoidably defined in international terms and to understand cultures of the world outside the Western tradition

A student must take one course of which at least half is devoted to: economic, political and social relations or interactions between or among different countries, in which the major focus is upon the interdependency of nations of the modern world; or contemporary features or historical traditions of non-Western cultures (excluding those dealing primarily with Greek, Roman, Western European or North American experience).

Note: Students may satisfy the international studies requirement at the same time they satisfy requirements in the major, in the humanities, or the social sciences. These courses qualify:

Agricultural economics—AGEC 615
Anthropology—ANTH 200, 505, 506, 507, 508, 511, 536, 604, 618, 630, 634, or 673
Economics—ECON 505, 506, 636, 681, or 682
Geography—GEOG 100, 620, 640, 650, 710, or 715
History—HIST 250, 350, 504, 505, 506, 514, 543, 544, or 545, 561, 562, 576, 577, 591, 592, 593, or 598
Journalism and mass communications—JMC 670
Management—MANGT 690
Marketing—MKTG 544
Modern languages—RUSSN 250, 504, 508, or 552
Philosophy—PHILO 310
Political science—POLSC 333, 505, 506, 511, 545, 722, 723, 724, 725, 726, 727, 728, 729, 741, 742, 743, 745, 747, 749, 751, 752, or 753
Sociology—SOCIO 505, 506, or 742

Note: Students may use the fourth course in a single foreign language sequence (other than Latin) to satisfy the international studies overlay requirement.

Additional requirements for the B.A.

Foreign language
(the 4 basic courses, 15 credit hours, in one of the foreign language sequences in the Department of Modern Languages, or equivalent competency)
Purpose: to bring students to a point at which they are able to proceed on their own to a command of a second language—a key for access both to a foreign culture and to much primary and secondary material in many special fields

Mathematics
(one 3-credit-hour course, 100 level above, or any other course for which there is a mathematics prerequisite)
Purpose: to give students a college-level competence in mathematical reasoning and analysis

Note: Any course used to satisfy this requirement cannot be used to satisfy any other general education requirement.

Additional requirements for the B.S.

Natural sciences
(1 course, 3 credit hours minimum, with a prerequisite in the same department; for this requirement, biochemistry courses with a chemistry prerequisite qualify as upper-level courses.)
Purpose: to give students who elect the bachelor of science degree an especially solid foundation in the natural sciences

Courses that qualify are those listed earlier under natural sciences, and:

Physical education—PE 330 or 335
Psychology—PSYCH 480 or 616

Quantitative and abstract formal reasoning
A course that satisfies this requirement may at the same time be used to satisfy any major requirement for which it qualifies. Fulfill this requirement one of three ways:

1. 3 courses, 9 credit hours minimum, selected from:
Mathematics—any course
Statistics—any course
Computer science—200 level or above
Philosophy—PHILO 110, 220, or 510

2. One course and its Level II prerequisite, selected from:
Physical education—PE 710
Physics—PHYS 113
Geography—GEOG 700
Sociology—SOCIO 520 or 725

3. Equivalent competency:
Purpose: to give the student training in a clear, nonambiguous, simplified language for the efficient transfer and logical analysis of information—a language in which a good deal of discussion is conducted in the sciences

Competency may be demonstrated by taking a Level III course or two Level II courses from:

Level II courses
Mathematics—MATH 125, 150, 170, or 205
Statistics—STAT 320, 330, 340, 350, 702, or 703
Computer science—CMPSC 200 and one of the labs CMPSC 201, 202, 206, 207, or 211
Philosophy—PHILO 510

Level III courses
Mathematics—MATH 210, 220, or 225
Statistics—STAT 341, 351, 704, or 705
Computer science—CMPSC 300 or 305
Philosophy—PHILO 701

Bachelor of Fine Arts

120 hours required for graduation

The Bachelor of Fine Arts degree is a professionally oriented undergraduate degree in art. Emphasis is placed on actual practice in the creative art disciplines. The degree is considered the appropriate preparation for the Master of Fine Arts degree, which is recognized as the terminal degree in studio arts, and for the Master of Arts in Art Therapy, which is required for certification as an art therapist. The BFA in art is a four-year, 120-credit-hour program with emphases possible in painting, sculpture, ceramics, graphic design, printmaking, metalsmithing and jewelry, drawing, and pre-art therapy. The degree requirements are as follows:

General education (45 hours):
Communications—English composition, two courses; and oral communication, one course
Social sciences—two courses
Humanities—three courses
Philosophy or mathematics—one course
Natural sciences—two courses, one with a lab
General electives—11-19 hours
Physical education—PE 101, Concepts of Physical Education

Art courses (75 credit hours):
Core—9 hours
Major—20 hours
Art electives and related courses—16 hours

Bachelor of Music degree

128 credit hours required for graduation

Areas of concentration offered in this curriculum are: all instruments, voice, theory, and composition. A secondary performance area also is required.

General requirements (42 hours)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
PE 101	Concepts in Physical Education	1
PHYS 125	Physics for Musicians	3
PSYCH 110	General Psychology	3
	Non-music electives	maximum 18
	Modern language	two courses minimum

The remaining hours to be taken in the area of concentration. For specific music requirements, see catalog statement for the Department of Music.

Bachelor of Music Education degree

135-139 credit hours required for graduation, depending on option

The program of study leading to this degree is a nine-semester curriculum designed to prepare music teachers for grades K-12. With careful planning and enrollment during summer session(s) all requirements may be completed in four years. Within this curriculum there are three options—one leading to certification in vocal/choral music, another to certification in instrumental music, and a third which permits both instrumental and vocal certification.

General education requirements for all options:

ENGL 100	English Composition I **and**	3
ENGL 120	English Composition II	3
	or	
ENGL 110	English Honors Composition I **and**	3
ENGL 125	English Honors Composition II	3
SPCH 106	Oral Communication IA	2
	Literature elective	3
PSYCH 110	General Psychology	3
	Social science electives (may not include other psychology courses)	9
PHYS 125	Physics for Musicians	3
	Natural science electives*	9
PE 101	Concepts in Physical Education	1
	Humanities electives**	

*must include one biological science; not more than four semester hours of mathematics may be included

**number of hours should complete the total 50 hours required in general education; modern languages courses are strongly recommended

Professional educational requirements for all options:
General education—DED 100
Administration and foundations—EDAF 215, 315, 611, 622 or 623 (623 is recommended)
Curriculum and instruction—EDCI 316, 451, and 582

Note: ENGL 100 and 120 (or ENGL 110 and 125) and SPCH 105 or 106, and EDAF 215 are required before admittance to EDAF 315. See education requirements for admittance to teacher education.

Music requirements for all options:
Comprehensive musicianship—MUSIC 172, 175, 176, 214, 215, 406, 407, 417, and 474
Performance—MUSIC 060, 501 or 502, and study of the major instrument or voice (including concurrent enrollment in MUSIC 055) each semester except the professional semester
Music education—MUSIC 412 and 413
Recital attendance—MUSIC 050 is required for a minimum of 7 semesters

Additional music requirements for instrumental option:
Performance—MUSIC 203, 204, 206, 207, and nine semester hours chosen according to the major instrument from: MUSIC 232, 233, 234, 235, 427, 428, 429
Also, enrollment in a major instrumental organization each semester except the professional semester
Music education—MUSIC 514
Restricted electives—minimum 3 hours from: MUSIC 420, 503, 521, 571, 601, 602, 615, 616, 631, 632, 702, 704, 705, 706, 708, 711, 714, 737, 738, 765, 766, 770, 772, 774, 776

Additional requirements for vocal/choral option:
Performance—if voice is the major performance area, MUSIC 232, 233, 234, 235, 285, and 287 or 465; four hours of keyboard; and enrollment in a major choral organization each semester except the professional semester. If keyboard is major area of performance, MUSIC 203, 204, 210, 211, 232, 233, 234, 235, 350 (two semesters), and enrollment in a major choral organization each semester except the professional semester
Music education—MUSIC 513
Restricted electives—minimum of 5 hours from: MUSIC 420, 465 or 467, 503, 521, 570, 571, 601, 602, 615, 616, 631, 632, 702, 704, 705, 706, 708, 711, 714, 737, 738, 765, 766, 770, 772, 774, 776

Additional requirements for instrumental/vocal option:
Performance—in addition to performance requirements already listed for instrumental or vocal/choral option, enrollments in major organizations must include some instrumental and some choral
Music education—MUSIC 513 and 514
Restricted electives—3 to 5 hours selected from courses listed earlier under restricted electives from instrumental or vocal/choral options
Education—EDCI 582, Teaching Participation in Music, must include observation and teaching of both instrumental and vocal music classes

Associate of Arts degree

Sixty hours including the following general requirements:

English—ENGL 100 and 120
Speech—SPCH 105 (or one course), courses subject to approval by Department of Speech
Modern languages—two years in one language or equivalent competence
Mathematics—one course
Humanities—three courses from: art, dance, English, history, modern languages, music, philosophy, speech, and Introduction to Women's Studies. No more than three courses in history may be used to fulfill humanities and social sciences requirements.
Social sciences—three courses from: anthropology, economics, geography (excluding GEOG 220 and 221), history, political science, psychology, sociology, social work, journalism and mass communications, and Introduction to Women's Studies. No more than three courses in history may be used to fulfill humanities and social sciences requirements.
Natural sciences—four courses, including one laboratory course

and one course which has a prerequisite in the same department: biochemistry, biology, chemistry, computer science, geography, (GEOG 220 and 221 only), geology, mathematics, physics or statistics.
Physical education—PE 101, Concepts in Physical Education

Associate of Science degree

Sixty hours including the following general requirements:

English—ENGL 100 and 120
Speech—SPCH 105 (or one course), courses subject to approval by Department of Speech
Humanities and social sciences—seven courses, taken from at least two departments, including one course in philosophy from: anthropology, art, dance, economics, English, geography (excluding GEOG 220 and 221), history, modern languages, music, philosophy, political science, psychology, sociology, social work, speech, journalism and mass communications, and Introduction to Women's Studies
Natural sciences—four courses, including one laboratory course and one course which has a prerequisite in the same department: biology, biochemistry, chemistry, computer science, geography (GEOG 220 and 221 only), geology, mathematics, physics, or statistics
Physical education—PE 101, Concepts of Physical Education

Program Options

Honors program

The honors program offers intellectually able and motivated students experiences in the humanities and in the social-behavior and natural sciences that are challenging and unusual in breadth and focus. By stressing liberal studies in the sophomore year, interdisciplinary study in the junior year, and independent study in the senior year, the honors program enables students to develop broad intellectual interests.

The honors program further enriches the experiences of its members by creating opportunities for them to develop a sense of community and to meet faculty and distinguished guests of the University in informal settings.

Students may be admitted to the honors program during the freshman year. Admission requires completion of a noncredit seminar, "Introduction to the Honors Program in Arts and Sciences," and achievement of a grade point average of 3.5 in course work completed as a full-time student during one semester of the freshman year. A student who satisfies those requirements may meet with the director of the honors program and petition to join. Once admitted, a student must maintain an overall grade point average of 3.3.

Students accepted into the honors program are expected to enroll in an honors section of ENGL 125, English Composition II. Students must complete: two seminars, one in social sciences or humanities and one in the natural sciences or mathematics, during the sophomore year; an interdisciplinary colloquium, incorporating perspectives of both the humanities and the sciences, during the junior year; and an independent study, under the supervision of a faculty member of the student's choice, during the senior year. The senior study is conducted at a beginning professional level and culminates in an honors thesis or other documentation of performance, which is filed with the director. This project is invaluable as evidence of a student's ability to organize and complete a study independently. It provides evidence of capability to do well in graduate studies and may enable the student to strengthen significantly an application to graduate school. It may also help make the case for a scholarship application or serve as the germ for more detailed investigation later in the student's career. Honors students are encouraged to complete a four-course sequence in a modern language other than English.

All phases of the honors program emphasize writing, both as a method of demonstrating one's understanding of a subject, and as a strategy for developing one's thinking skills.

in addition to the curricular options described, students in the honors program have many opportunities to individualize their courses of study. Student-designed curricular plans may be approved with the consent of department heads involved, the director of the honors program, and the dean of the college. Students are also encouraged to propose other plans in their course work, including off-campus learning experiences which may be supplemented by reading, discussion, and reporting for course credit with the approval of the proper supervising faculty.

A transfer student or other upperclassman who has a grade point average of 3.5 and who receives a positive evaluation by the director may be admitted to the honors program as late as the beginning of the junior year. Persons who wish to be considered for late admission should contact the director.

For more information, please contact the Director of the Honors Program, College of Arts and Sciences, Eisenhower Hall, Manhattan, Kansas 66506.

DAS 010. Introduction to the Honors Program in Arts and Sciences. (0) I, II. Direction and goals for the honors program in the College of Arts and Sciences. Meets four-six times during the semester. DAS-010-0-4900

DAS 388. Honors Internship. (1-3) I, II, S. A scholarly investigation related to activities in a place of employment or in a volunteer situation. Written and oral presentations are required. Pr.: Concurrence of a faculty advisor and approval of the Arts and Sciences Honor Program Advisory Council. DAS-388-2-4900

DAS 399. Junior Honors Colloquium. (3) I, II. An interdisciplinary colloquium whose topics change each semester. Consistently incorporates perspectives of sciences and humanities. Pr.: Non-credit seminar, Introduction to Honors Program in Arts and Sciences, and two honors program sophomore seminars. DAS-399-0-4900

Study Abroad

The Office of Study Abroad is located in 14-A Eisenhower Hall. It is a central depository for information on all KSU programs to England (art, architecture, education, history, the theatre), France (education, French), Germany (agriculture, German), Mexico (biology, Spanish), Australia (agriculture), and South America (agriculture). In addition to providing information on KSU's summer and interim programs and our official exchange with Justus-Liebig University in Germany, the Office of Study Abroad maintains an up-to-date library of overseas programs and workshops sponsored by other colleges and universities. Included in this library are bulletins, catalogs, and directories for study-travel, scholarships, and employment opportunities abroad.

Summer independent reading program

Each summer the College of Arts and Sciences offers an opportunity for students to independently read six books during their summer holidays for two hours of academic credit. Each year two books are chosen in the humanities, two in the social

sciences and two in the natural sciences; the books chosen are all intelligible to the non-specialist, are usually current paperbacks, and are frequently controversial.

In the fall, students meet in three small two-hour seminars moderated by a faculty member. A written examination is given for each pair of books and the course appears on the student's transcript of courses for the fall term. The course may be taken on the A/Pass/F basis.

Students wishing to take the course should enroll in arts and sciences course DAS 199 during the spring pre-enrollment period preceding the summer they wish to do the reading. If the decision to take the course is made at a later time a student should see an advisor in the dean's office.

DAS 199. Summer Independent Reading Program. (2). DAS-199-3-4901

Linguistics

The departments of English, modern languages, speech, and sociology, anthropology and social work offer cross-listed linguistics courses available for either graduate or undergraduate credit.

The courses provide students in education, anthropology, foreign languages, psychology, philosophy, literature, and other areas an opportunity to appreciate both the rich structure of language itself and relationships between their disciplines and linguistic studies.

Most of the courses emphasize English, French, Spanish, and German, but all have numerous examples from other languages as well.

For further information about linguistics courses, contact either the participating departments or the linguistics advisor in 110 Leasure Hall.

Liberal arts with secondary teacher certification

An arts and sciences major may apply some elective hours toward the requirements for secondary teacher certification. In most arts and sciences departments, the student can complete the academic major and earn certification within the 120 hours of course work required for a degree. Because the teacher training courses are offered through the College of Education, a student who chooses to combine these two programs is entitled to two advisors, one in the major field of study, the other in secondary education.

By combining a traditional academic major with teaching certification, a student can be assured of varied choices after graduation. The liberal arts degree will equip a student to pursue graduate or professional study or to apply the education to careers. By pursuing an arts and sciences major, students also have the option of working toward a bachelor of arts degree and studying a foreign language. In addition, the teaching certification will qualify a graduate to teach in a public secondary school. For specific certification requirements in Secondary Education, please see the College of Education section of this catalog.

Liberal arts with business preparation

Liberal arts study has long been recognized as equipping students with the communications, analytic, problem-solving, and interpersonal skills essential to success in business administration. A student who plans a career in business can acquire both a liberal arts education and a basic preparation for business by carefully designing, in consultation with the advisor, a program of study integrating course work in economics, mathematics, statistics, computer science, accounting, and business, with course work in the academic major. Because most of these courses may be used to satisfy the basic requirements for the bachelor of arts or bachelor of science degree, and others will count as electives, it is possible for an arts and sciences student to acquire a sound background in business-related courses within the 120 hours needed for the undergraduate degree.

Arts and sciences majors who would like more information about designing such a degree should inquire in the dean's office, College of Arts and Sciences, 113 Eisenhower Hall.

Interdisciplinary majors

Interdisciplinary majors provide an opportunity for students to organize their interests within a broad area of study rather than within the narrower focus required by a major in a single discipline. Students who want to create their own fields of emphasis and students who are eager to pursue multidisciplinary solutions to complex problems often choose an interdisciplinary major. Other students choose interdisciplinary study as a second major, adding it to a departmental major in order to gain expertise in complementary areas.

The College of Arts and Sciences offers four interdisciplinary majors:

Major	Degree(s)	Credit hrs.
Humanities	B.A. only	30
Life science	B.S. or B.A.	30
Physical science	B.S. or B.A.	34
Social science	B.S. or B.A.	30

The requirements for each of the interdisciplinary majors are sufficiently flexible to allow individual students, in consultation with their advisors, to devise degree programs designed to meet their particular needs, interests, and career goals.

Interdisciplinary majors are advised in the College of Arts and Sciences dean's office. For more information about these majors, students may call 532-6900 or stop by 113 Eisenhower Hall.

Humanities

Humanities disciplines are those which deal with various aspects of culture. They include art, dance, theatre, history, languages, literature, music, philosophy, and speech. The humanities major leads to a bachelor of arts, the traditional liberal arts degree. The intellectual training and cultural appreciation students acquire through humanistic study enable them to apply humanistic values and perspectives toward solutions to the problems of today and tomorrow.

Humanities majors take fifteen hours in each of two humanities fields, including at least one upper-level course in each field.

Life science

Life science is a multidisciplinary major which deals with studies of living organisms and life processes.

Curriculum		Credit hrs.
BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
BIOL 220	Bacteriology & Man	3
ANTH 280, 281	Introduction to Physical Anthropology & Lab	4
PSYCH 110	General Psychology	3

The remaining 11 semester hours must include appropriate courses selected from two or more of the following fields: biochemistry, biology, microbiology, physical anthropology, and psychology. At least two of these courses must be above the introductory level.

Physical science
Physical science is a multidisciplinary major which deals primarily with nonliving matter. It concerns itself with the theoretical and observable natural phenomena of our world and universe. The physical science disciplines include chemistry, geology, mathematics, and physics.

Curriculum		Credit hrs.
MATH 150	Plane Trigonometry	3
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
GEOL 100	Introductory Geology	3
	or	
GEOL 105	Oceanography	3
GEOL 130	Elementary Geology Laboratory	1
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4

In addition, at least three courses must be taken from two or more of these fields: chemistry, geology, mathematics, and physics. At least two of these courses must be above the introductory level.

Social science
Social science is a branch of learning devoted to the examination of human institutions and behavior. Social science majors study society's institutions—their structures, theoretical foundations, evolution, and interrelationships—and how they affect and are affected by human behavior. The social science disciplines include anthropology, economics, geography, history, political science, psychology, and sociology. Majors are required to choose a total of ten courses from at least four of these fields, with at least four courses being above the introductory level.

Pre-professional programs

Medical technology curriculum
The medical technology curriculum requires 90 semester hours of preclinical courses and 12 months of work at one of the affiliated clinical programs. The latter are located in Kansas City at Providence-St. Margaret Health Center, Research Hospital and Medical Center, or Baptist Memorial Hospital; in Topeka at the Topeka School of Medical Technology; or in Wichita at St. Francis Hospital. Admission into that portion of the training is by application; students are expected to have a minimum GPA of 2.5 for both overall work and for the required science courses. All the requirements for a bachelor's degree must be completed before a student is allowed to sit for the certification examination.

In addition to the general requirements of the College of Arts and Sciences, the following courses are required:

Preclinical courses		Credit hrs.
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
PHYS 115	Descriptive Physics	4
BIOL 198	Principles of Biology	4
BIOL 555	Microbiology	5
BIOL 240	Structure & Function of the Human Body	6
ASI 500	Genetics	3
	or	
BIOL 400	Human Genetics	3
BIOL 610	Bacteriology of Human Disease	5
BIOL 670	Immunology	4
BIOL 671	Immunology Laboratory	2
BIOL 545	Human Parasitology	3
BIOL 546	Human Parasitology Laboratory	1
CHM 271	Chemical Analysis	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Laboratory	2

Clinical courses
DAS 401. Clinical Microbiology. (6-8) II. The theory and laboratory study of pathogenic bacteria, viruses, richettsiae, fungi, and parasites. Includes morphology, physiology, taxonomy, and medical significance. DAS-401-2-1223

DAS 402. Clinical Chemistry. (6-8) I. Theory and laboratory study of analytical biochemistry, incorporating both routine and special chemical procedures. DAS-402-2-1223

DAS 403. Clinical Hematology. (4-6) S. Study of blood cell derivation, maturation and function, principles of hemastasis and blood coagulation. Methodology used in routine and special hematology studies. DAS-403-2-1223

DAS 404. Clinical Immunology. (2-6) I. Includes Immunohematology, the study of fundamentals of antigen-antibody reactions, blood groups and types, crossmatches, blood components and the laboratory methods used in immunohematology studies; and Serology, the theory of immunologic responses and procedures used in determination of serological studies. DAS-404-2-1223

DAS 405. Topics in Medical Technology. (3-6) II. Includes basic principles and practices of the medical laboratory, techniques and special projects. DAS-405-2-1223

Pre-dentistry curriculum
U.S. dental schools require applicants to have satisfactorily completed a specified set of courses and to present acceptable scores on the Dental Admission Test. The majority of entrants earn bachelor's degrees prior to matriculating.* As there is no dental school in Kansas, the Kansas Board of Regents has made agreements with two dental schools (The University of Missouri in Kansas City and Creighton University) reserving a number of seats for Kansas residents. The courses listed in the predental major satisfy the course requirements for these schools.

Curriculum		Credit hrs.
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry **and**	3
CHM 351	General Organic Chemistry Laboratory	2
	or	
CHM 531	Organic Chemistry I **and**	3
CHM 532	Organic Chemistry I Laboratory **and**	2
CHM 550	Organic Chemistry II	3
BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
	Biology electives (400 level or above)	8
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3

Additional information may be obtained in the offiee of the dean of arts and sciences.

*Students who enter dental school after completing only 90 credit hours, which includes the courses listed in the predental major and the general education requirements for the B.A. or B.S. degree, may complete degree requirements by transferring 30 eredit hours from an accredited dental school.

Pre-medicine curriculum

Medical schools in the United States require applicants to have satisfactorily completed a bachelor's degree before matriculating,** to include a series of required courses in their studies, and to present acceptable scores on the Medical Collcge Admission Test. Kansas residents are given preference at the University of Kansas Medical School. The courses listed below constitute the premedical major and fulfill the course requirements at most U.S. medical sehools and at the University of Kansas Medieal Sehool.

Curriculum		Credit hrs.
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 271	Chemical Analysis	4
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry Laboratory	2
CHM 550	Organic Chemistry II	3
CHM 551	Organic Chemistry II Laboratory	2
MATH 220	Analytic Geometry & Calculus I	4
	or	
MATH 205	General Calculus & Linear Algebra	3
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
BIOL 198	Principles of Biology	4
BIOL 400	Human Genetics	3
	or	
ASI 500	Genetics	3
BIOL 510	Embryology	3
BIOL 511	Embryology Laboratory	1

Additional information may be obtained in the office of the dean of arts and seiences.

**Applicants for whom the degree requirement is waived, and who enter medical school before completing the bachelor's degree and who have completed all the general education requirements and the major for the B.A. or B.S. degree, may complete degree requirements by transferring 30 semester hours from an aecredited medical school.

Pre-optometry program

In order to apply for admission to a school of optometry, students are expected to have successfully completed at least three years of college work ineluding a set of specified scienee and math courses and to have taken the Optometry College Admission Test. Students must receive a bachelor's degree before the optometry degree will be granted. Although there is no optometry school in Kansas, the Kansas Board of Regents has an agreement with the University of Houston Sehool of Optometry by which ten seats are reserved for Kansas residents.
The following courses are required by the University of Houston School of Optometry:

Curriculum		Credit hrs.
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
MATH 220	Analytic Geometry & Calculus I	4
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
BIOL 555	Microbiology	5
BIOL 240	Structure & Function of the Human Body	6
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Laboratory	2
PSYCH 110	General Psychology	3
STAT 320	Elements of Statistics	3

These eourses also fulfill most of the requirements for the other schools of optometry. The list does not constitute a major toward an undergradute degree.

Pre-veterinary curriculum*

Seventy-one semester hours are required for students applying for admission to the freshmen elass entering the College of Veterinary Medicine in the fall of 1985.

Curriculum		Credit hrs.
ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Laboratory	2
ASI 102	Principles of Animal Science	3
ASI 103	Dairy Science	1
ASI 104	Poultry Science	1
ASI 105	Animal Sciences & Industry	1
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
BIOL 198	Principles of Biology	4
ASI 500	Animal Genetics	3
BIOL 510	Embryology	3
BIOL 511	Embryology Laboratory	1
BIOL 555	Microbiology (with lab)	5
ASI 200	Fundamentals of Nutrition	3
	Social sciences and/or humanities electives	12
		71

Because the pre-veterinary curriculum is not a degree-granting program, students in arts and sciences are encouraged to combine the pre-veterinary requirements with a degree-granting major of their choice. Students should consult the pre-veterinary advisors in the offiee of the dean of arts and seiences.

*If the major is in arts and seienees, the pre-veterinary requirements should be eompleted there. However, the pre-veterinary requirements may be completed in the College of Agriculture if a student's major is in that eollege.

Pre-pharmacy curriculum

The admission committee of the Pharmacy School of the University of Kansas gives a preferenee to applicants who are Kansas residents. The following courses constitute their requirements and fulfill most of the requirements of the other U.S. pharmaey sehools.

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry Laboratory	2

CHM 550	Organic Chemistry II	3
CHM 551	Organic Chemistry II Laboratory	2
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
MATH 220	Analytic Geometry & Calculus 1	4
	or	
MATH 205	General Calculus & Linear Algebra	3
BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
BIOL 240	Structure and Function of the Human Body*	6
BIOL 555	Microbiology	5
PHYS 115	Descriptive Physics**	4
	or	
PHYS 101	The Physical World 1 **and**	3
PHYS 103	The Physical World 1 Laboratory	1
SPCH 106	Oral Communication IA	3
	Humanities and social sciences electives	6

*BIOCH 521 and 522, General Biochemistry and Laboratory, may be substituted for BIOL 240, Structure and Function of the Human Body.

**Students who have completed high school physics with a grade of B or better may be exempt.

Additional information may be obtained in the office of the dean of the College of Arts and Sciences.

Pre-law curriculum
While the Association of American Law Schools considers the suggestion of particular courses for a pre-law curriculum unwise, it does emphasize the selection of rigorous courses which will enable students to achieve comprehension and expression in words; critical understanding of the human institutions and values with which the law deals; and creative power in thinking. The development of these capacities is a highly individualized process vigorously pursued in a variety of disciplines and degrees. As early as possible in their undergraduate careers, students should consult with the pre-law advisor in the office of the dean of arts and sciences.

Pre-nursing curriculum
Students may enter the pre-nursing curriculum and take the necessary courses and electives for transferring to a school of nursing. The number of credits earned and the courses taken will vary depending on the school of nursing the student desires to attend. For students entering a baccalaureate degree program in nursing, generally two years of course work (60-65 credit hours), as prescribed by the university granting the degree, are required. The pre-nursing advisor in the office of the dean of arts and sciences will assist students in selecting appropriate courses, advising them regarding the different kinds of nursing education and in processing applications.

For the licensed practical nurses and registered nurses special advising is available to help the individual in selecting appropriate classes. This assistance is provided by the pre-nursing advisor in the dean's office of the College of Arts and Sciences.

DAS 194. Introduction to Nursing. (1) II. The roles of the nurse, trends in nursing and the delivery of nursing care. Pr.: Permission of the instructor. DAS-194-2-1203

DAS 202. Practicum in Nursing. (2). Interim semester only. For students considering professional nursing as a career. Introduction to development of nursing care skills. Lecture Laboratory and clinical experience. DAS-202-2-1203

Pre-physical therapy curriculum
To be eligible for the two physical therapy degree programs in Kansas, students should complete the following course requirements.

ENGL 100	English Composition 1	3
ENGL 120	English Composition II	3
	One additional literature class	3
SPCH 10-	Oral Communication	3
PSYCH 110	General Psychology	3
PSYCH 505	Abnormal Psychology	3
PSYCH 520	Life-Span Personality Development	3
SOCIO 211	Introduction to Sociology	3
	Humanities (history, art history, music literature, philosophy, English)	6
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
	or	
MATH 125	College Algebra & Trigonometry	5
BIOL 198	Principles of Biology	4
BIOL 240	Structure & Functions of the Human Body	6
BIOL 220	Bacteriology & Man	3
CHM 210	Chemistry 1	4
CHM 230	Chemistry 11	4
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
	Electives to total 65 credit hours	

Any student interested in this program should consult with the pre-physical therapy advisor in the dean's office of the College of Arts and Sciences for details.

KSU has an affiliation agreement whereby students are eligible to apply to the certificate School of Physical Therapy of the Mayo Foundation, Rochester, Minnesota, provided they have successfully completed the above curriculum plus the distribution requirements for the B.A. or B.S. degrees, and a total of 90 hours.

Aerospace Studies

Terry L. Heyns, head of department

Assistant Professors Braun, Chrisman, and Stambaugh; Instructors Kerr and Soap.

The Air Force Reserve Officer Training Corps (AFROTC) provides the best means for undergraduate and graduate students to become officers in the United States Air Force. Upon completion of the university program, students are commissioned second lieutenants, and then:

enter directly into normal active service for a specified period, taking flight training or performing managerial, research, or development tasks, **or**

are deferred for graduate study, to enter active service after completion for a specified period, **or**

enter into Air Force-sponsored graduate study at full pay while serving as Air Force officers.

Any student—graduate or undergraduate—who is a U.S. citizen may become a cadet. The duration of the program varies from two to four years, depending upon an applicant's previous experience and the availability of different options.

Scholarships
Freshmen and sophomores may apply for Air Force ROTC college scholarships. If selected, students will have their tuition, fees, and book allowances for all courses taken at Kansas State University paid for by the U.S. Air Force, and they will receive $100 monthly.

High school students considering application for the four-year Air Force College Scholarship Program must be highly motivated toward becoming Air Force officers. To qualify, students should be above average scholars, physically capable, possess leadership potential, and make application before December 15 of the senior year. Financial benefits are the same as mentioned earlier.

Undergraduate and graduate study

Four-year program
Basic course. Students electing the four-year program normally will begin with the General Military Course (GMC) during the freshman or sophomore year. This program consists of four semesters of one credit hour each, counts toward all bachelor's degrees awarded by KSU, and in no way obligates students to a military commitment. Students in the GMC are provided uniforms, texts, and other equipment needed for their AFROTC courses.

Advanced course. The Professional Officer Course (POC) is the upperclass program and consists of four courses of three credit hours each, over a period of four semesters. All cadets in the POC become members of the Air Force Reserve and receive $100 a month and all necessary AFROTC texts and equipment. Upon completion of the POC and their degree requirements, students are commissioned as second lieutenants in the United States Air Force.

Two-year program
The two-year program consists of the POC phase only and may be taken during a student's final four semesters, undergraduate or graduate, at the University.

Prerequisites for selection include Air Force aptitude testing, an Air Force physical, and completion of six weeks of summer field training. Applicants should contact AFROTC prior to the beginning of the spring semester.

Field training
Cadets practice their leadership and management skills in a cadet group. Those cadets who are in the four-year program attend four weeks of field training at an Air Force base during the summer prior to entering the POC. Two-year program cadets attend six weeks of field training. During training, the cadet is paid approximately $115 per week, and receives travel pay to and from the training base.

Extracurricular activities
Students enrolled in Air Force ROTC may participate in many activities including detachment-sponsored events and social functions. Cadets pursuing officers' commissions are eligible for membership in the Arnold Air Society, a national honorary professional and service organization established to foster good relations among Air Force ROTC, the Air Force, the campus, and the local community. Angel Flight, an auxiliary organization of Arnold Air Society, supports Air Force ROTC through activities and programs aimed at publicizing the local detachment and University, Air Force ROTC, and the Air Force. Participation in the Arnold Air Society and the Angel Flight is voluntary.

Flying Program
For those cadets who desire to become Air Force pilots, AFROTC offers the Flight Instruction Program (FIP). The program is offered to cadets in the junior year who have pilot allocations. The ground school is taught by a detachment officer and the flying portion is done at Manhattan Airport.

AFROTC Supplemental Courses Program
The Supplemental Courses Program (SCP) provides both required and recommended courses designed to enhance the career and officer performance of persons commissioned through AFROTC.

GMC scholarship cadets must successfully complete a course in English composition by the end of the sophomore year. They are also encouraged to take a course in speech.

POC cadets must successfully complete a course in mathematical reasoning prior to commissioning.

In all cases, successful completion of a KSU required course in a supplemental subject area will also satisfy the AFROTC requirement. Details on the SCP are available through the Department of Aerospace Studies.

Foreign language requirement
AFROTC cadets who accept scholarships are required to successfully complete at least one semester of college instruction in a major Indo-European or Asian language prior to commissioning. AFROTC policy is to allow cadets to meet the requirement by completing a course or by demonstrating proficiency as certified by the Department of Modern Languages.

General military courses
Undergraduate credit

AERO 113. Aerospace Studies 1A. (1) I. A study of the mission and organization of the United States Air Force; U.S. general purpose and aerospace support forces. One hour of class plus one hour of leadership training a week. AERO-113-0-1803

AERO 114. Aerospace Studies 1B. (1) II. U.S. strategic offensive and defensive forces; their mission, function, and employment. One hour of class plus one hour of leadership training a week. AERO-114-0-1803

AERO 210. Aerospace Studies 2A. (1) I. The development of air power from its beginnings to the end of World War II. It traces the development of various concepts of employment of air power. One hour of class plus one hour of leadership training a week. AERO-210-0-1803

AERO 211. Aerospace Studies 2B. (1) II. The development of air power from the close of World War II to the present. It focuses upon factors which have prompted research and technological change and stresses those elements that provide significant examples of the impact of air power on strategic thought. One hour of class plus one hour of leadership training a week. AERO-211-0-1803

AERO 215. AFROTC Summer Program. (4) S. Mission and organization of United States Air Force, including function and employment, development of air power from its beginning to the present. Emphasis on factors prompting research and technological change and impact of air power on strategic issues. Taught off campus at selected Air Force bases. Pr.: Open only to students entering AFROTC program at the junior level. AERO-215-0-1803

Professional officers courses
Undergraduate credit

AERO 310. The Professional Officer 3A. (3) I. A study of USAF professionalism, leadership, and management. Includes the meaning of profcssionalism, professional responsibilities, the military justice system, leadership theory, functions and practices, management principles and functions, problem solving, and management tools, practices and controls. Threc hours of class plus one hour of leadership training a week. AERO-310-0-1803

AERO 311. The Professional Officer 3B. (3) II. Continuation of AERO 310. Three hours of class plus one hour of leadership training a week. AERO-311-0-1803

AERO 381. Briefing for Air Force Commissioned Service. (1) I, II. Ordinarily taken by POC cadcts during their last scmester of officer training. Provides specific understanding of processes and procedures incident to entering active duty as an officer in the USAF. AERO-381-3-1803

AERO 399. Problem in Aerospace Studies. (Var.) I, II. Work offered in any of the AFROTC general or professional courses for students out of phase for graduation; material covered in a basic or advanced course. Pr.: Consent of department head. AERO-399-3-1803

AERO 400. Aerospace Studies 4A. (3) I. This course will examine the role of the professional officer in a democratic society; socialization processes within the armed services; the requisites for maintaining adequate national security forces; political, economic, and social constraints upon the overall defense policy-making process. Three hours a week. AERO-400-0-1803

AERO 401. Aerospace Studies 4B. (3) II. Focusing on the armed forces as an integral element of society, this course provides an examination of the broad range of American civil-military relations and the environmental context in which defense policy is formulated. Communicative skills are stressed. The role of contemporary aerospace power, and current and future employment of aerospace forces will also be examined. Three hours of class plus one hour of leadership training a week. AERO-401-0-1803

Art

Charles Stroh,* head of department

Professors Garzio,* Larmer,* Pujol,* and Stroh;* Associate Professors Culley,* Ikeda,* Munce,* Rex Replogle,* Sturr,* Woodward,* and Vogt;* Assistant Professors Clore, Kren,* Love,* Noblett,* O'Shea,* Routson,* Schmidt,* Swiler,* and Winegardner; Instructors Dollar, Renata Replogle, Ogg, and Hagan; Emeriti: Professor Barfoot; Associate Professors Harris and Hill; Assistant Professor Geiger.

Undergraduate study

Bachelor of arts. The B.A. degree in art consists of three parts: the general education as outlined under the humanities curriculum; a core of beginning art courses to provide prerequisites and a broad range of art experience for the art major; and 16 hours concentration of related subjects which should provide a minimal basis for establishing professional competence. Concentration possibilities will be in one of the following: painting, printmaking, ceramics, sculpture, drawing, art history, metalsmithing and jewelry, and graphic design. The bachelor of arts degree requires a minimum of 48 semester hours in art.

Major requirements

Art history (12 hours)

ART 195	Survey of Art History I	3
ART 196	Survey of Art History II	3
ART 545	Twentieth Century Art History I	3
ART 550	Twentieth Century Art History II	3
ART 100	Design I	2
	or	
ART 200	Design II	2
	or	
ART 215	Design III	2
ART 190	Drawing I	2
ART 210	Drawing II	2
ART 225	Figure Drawing I	2
ART 230	Sculpture I	2
ART 245	Painting I	2
ART 235	Printmaking I	2
ART 220	Water Color I	2
ART 265	Ceramics I	2
	Major concentration	16

Bachelor of Fine Arts. The Bachelor of Fine Arts degree is the more professionally oriented undergraduate degree in art. It is designed primarily for those planning to become professional artists, artist-teachers, or art therapists. Greater emphasis is placed on actual practice in the creative art disciplines. The degree is considered the appropriate preparation for the Master of Fine Arts degree, which is recognized as the terminal degree in studio arts, and for the Master of Arts in Art Therapy, which is required for certification as an art therapist. The BFA in art is a four-year, 120-hour program with concentrations possible in painting, sculpture, ceramics, graphic design, printmaking, drawing, metalsmithing and jewelry, and pre-art therapy. The major requirements are as follows:

Art history (15 hours)

ART 195	Survey of Art History I	3
ART 196	Survey of Art History II	3
ART 545	Twentieth Century Art History I	3
ART 550	Twentieth Century Art History II	3
	Art history electives	3
ART 100	Design I	2
ART 200	Design II	2

Drawing (8 hours)

ART 190	Drawing I	2
ART 210	Drawing II	2
	Drawing electives	4
ART 225	Figure Drawing I	2
ART 245	Painting I	2
ART 230	Sculpture I	2
ART 265	Ceramics I	2
ART 235	Printmaking I	2
ART 270	Metalsmithing & Jewelry	2
ART 410	BFA Exhibition	0
	Major concentration	20
	Art electives	16
Total		75

Art education. Students may satisfy requirements to teach art in public schools by any of three programs: B.A. and teacher certification; BFA and teacher certification; or B.S. in education with art concentration. Under the first two options students qualify for teacher certification by completion of specified courses in the College of Education. Art students may enroll in Introduction to Civilization of South Asia as a

humanities requirement. See the Academic Programs section for information.

Studios, laboratories, and equipment for creative work are provided and adequate to the needs of the art areas. Student work may be retained at the discretion of the faculty for an indefinite period of time for instructional and exhibition purposes.

Pre-art therapy. Preparation for graduate work leading to certification as an art therapist may be done as one concentration in the regular BFA program. The pre-art therapy concentration is the BFA degree with the major concentration (20 credit hours) and the art electives (16 credit hours) selected from a group of specific courses in psychology and art rather than a particular study concentration.

Transfer students

Art hours transferred to KSU will be assigned by the art department. Students may use transfer hours toward their area of concentration only when obtained from a four-year college or university.

Graduate study

Work leading to the Master of Fine Arts is offered in the Department of Art in the fields of drawing, painting, printmaking, sculpture, ceramics, and metalsmithing and jewelry.

Candidates for graduate work should have completed an undergraduate curriculum with a broad background in art. Students lacking preparation in certain areas may be asked to do additional work. Other requirements for the Master of Fine Arts degree, include a minimum of 60 semester hours, approximately two-thirds of which will be in the field of concentration. The candidate will be encouraged to take supporting courses in the study of art history.

The candidate will take an oral examination based in part on the academic thesis submitted. The studio project for the thesis will consist of a significant creative effort in the candidate's chosen major medium, which must be publicly exhibited, and a written document providing an analysis of that work.

Courses in art

ART 095. Art Assembly. (0) I, II. Recommended for all art and art education majors each semester. By appt. ART-095-2-0831

Undergraduate credit

ART 100. Design I. (2) I, II, S. Introduction to and laboratory practice in the principles and elements of design. Four hours lab. ART-100-1-1002

ART 170. Art for Elementary Schools. (3) I, II, S. Art methods, materials, and philosophy of children's art at different grade levels. Six hours lab. ART-170-1-0-0831

ART 190. Drawing I. (2) I, II, S. Fundamentals of drawing as applied to the realistic and expressive representation of objects through the use of a variety of media and approaches. Four hour lab. ART-190-1-0-1002

ART 195. Survey of Art History I. (3) I, S. Historical development of art from Pre-History through the Middle Ages. ART-195-0-1003

ART 196. Survey of Art History II. (3) II, S. Historical development of art from the Renaissance to the nineteenth century. ART-196-0-1003

ART 200. Design II. (2) I, II, S. Further work in the principles and elements of design, with emphasis on color, texture, and pictorial composition. Four hours lab. Pr.: ART 100. ART-200-1-0-1002

ART 205. Graphic Design Techniques. (2) I, II, S. Layout and drawing techniques and tools used in various media related to reproducing art for commercial reproduction purposes. Four hours lab. Pr.: ART 100, 190. ART-205-1-0-1002

ART 210. Drawing II. (2) I, II, S. Continuation of Drawing I, with strong emphasis on creative expression. Four hours lab. Pr.: ART 100, 190. ART-210-1-0-1002

ART 215. Design III. (2) I, II. Work in three dimensions in sheet metal, plaster, plastics, paper, wire, etc., using the principles and elements of design. Four hours lab. Pr.: ART 100. ART-215-1-0-1002

ART 220. Water Color I. (2) I, II, S. Painting in water color and other water-soluable media; includes both studio and outdoor painting and sketching. Four hours lab. Pr.: ART 100, 190. ART-220-1-0-1002

ART 225. Figure Drawing I. (2) I, II, S. Sustained drawings of the human figure using a variety of media; introduction to human anatomy used by artists. Four hours lab. Pr.: ART 210. ART-225-1-0-1002

ART 230. Sculpture I. (2) I, II, S. An introduction to the problems of sculptural form; fundamental techniques and theory in clay modeling, molding, casting, and direct plaster. Four hours lab. Pr.: ART 100, 190. ART-230-1-0-1002

ART 235. Printmaking I. (2) I, II, S. Introduction to the intaglio, lithographic, and serigraphic printmaking techniques and tools. Four hours lab. May be taken for three semesters in order to obtain experience in each of the three techniques. Pr.: ART 100, 190. ART-235-1-0-1002

ART 240. Drawing III. (3) I, II. Continuation of Drawing II, emphasizing exploration in mixed media. Six hours lab. May be taken for two semesters. Pr.: ART 210. ART-240-1-0-1002

ART 245. Painting I. (2) I, II, S. Introduction to painting through a variety of media and techniques. Four hours lab. Pr.: ART 100, 190. ART-245-1-0-1002

ART 250. Spinning and Natural Dyes. (2) I, II. Basic instruction in use of spindle and spinning wheel; process of extracting and use of dye from commonly available plants. Four hours lab. Pr.: ART 100, 190. ART-250-1-0-1002

ART 255. Primitive Loom Construction. (2) I, II. Exploration of primitive loom systems and construction of some suited to individual purposes. Basic instruction in weaving with emphasis on acquisition and aesthetic use of commonly available materials. Four hours lab. Pr.: ART 100, 190. ART-255-1-0-1002

ART 260. Design in the Crafts. (2) I. Crafts work in various media, with emphasis on contemporary design. Four hours lab. May be taken for credit two semesters. Pr.: ART 100. ART-260-1-0-1002

ART 265. Ceramics I. (2) I, II, S. Introduction to basic hand building techniques; decoration of ceramic forms using slips, stains, glazes, etc. Student participation in Raku firing procedures; stacking and firing of electric kilns. Four hours lab. Pr.: ART 100 or consent of instructor. ART-265-1-0-1002

ART 270. Metalsmithing and Jewelry. (2) I, II, S. Design and execution of small-scale, three-dimensional objects, involving the basic processes of raising, forging, and fabrication in semi-precious metals. The techniques of centrifugal and vacuum casting of precious metals will also be introduced as well as soldering and piercing. Four hours lab. May be taken for credit three semesters. Pr.: ART 100. ART-270-1-0-1002

ART 275. Weaving I. (2) I, II, S. Introduction to basic weaving techniques and the use of four harness looms. Emphasis on the aesthetic use of fibers. Four hours lab. Pr.: ART 100, 190. ART-275-1-0-1002

ART 280. Art Education Seminar. (2) II. An introduction to concepts in art education. Research, literature, creativity, aesthetics, and the history of art education as they relate to teaching art. ART-280-2-0831

ART 290. Lettering. (2) I, II. Study of traditional lettering forms, including Roman, Gothic, Text, Script, and some contemporary adaptations of these. Four hours lab. Pr.: ART 100, 190. ART-290-1-0-1002

ART 295. Photography in Art I. (2) I, II. Understanding and using photography as an art form. The basic elements and principles of art are explored. Camera usage and photographic processing are covered. An adjustable camera is required. Pr.: ART 100, 190. ART-295-1-0-1002

ART 300. Special Studies in Art. (1, 2) I, II, S. Specialized workshops or seminars conducted in studio, art therapy, art education, or art history. ART-300-2-1001

ART 310. Sophomore Honors Seminar in Art. (3). Selected topics in art. Pr.: For students in the Honors Program only. ART-310-0-1002

ART 410. B.F.A. Exhibition. (0) I, II. The preparation and execution of a senior exhibition of the student's own creative work primarily from his/her area of concentration. The student will be responsible for all the arrangements for the exhibition including scheduling, installation, and publicity. ART-410-1-0-1002

ART 420. History of South Asian Art. (3) I, II. A survey of the history of art in the South Asian sub-continent from its prehistoric origins to the height of the Mughal period in the 18th century A.D. Mythological, symbolic, tantric, and religious dimensions of South Asian art are studied as well as regionally important technical and aesthetic aspects. Includes the art of India, Pakistan, Bangladesh, Nepal, Sri Lanka, Afghanistan, Indonesia and Indochina. ART-420-0-1003

ART 430. Independent Study—Ceramics. (1-5) I, II, S. Work offered in ceramics after competency has been achieved. Personal development is emphasized. ART-430-3-1002

ART 435. Independent Study—Crafts. (1-5) I, II, S. Work offered in crafts after competency has been achieved. Personal development is emphasized. ART-435-3-1002

ART 440. Independent Study—Drawing. (1-5) I, II, S. Work offered in drawing after competency has been achieved. Personal development is emphasized. ART-440-3-1002

ART 445. Independent Study—Graphic Design. (1-5) I, II, S. Work offered in graphic design after competency has been achieved. Personal development is emphasized. ART-445-3-1002

ART 450. Independent Study—Metalsmithing and Jewelry. (1-5) I, II, S. Work offered in metalsmithing and jewelry after competency has been achieved. Personal development is emphasized. ART-450-3-1002

ART 455. Independent Study—Painting. (1-5) I, II, S. Work offered in painting after competency has been achieved. Personal development is emphasized. ART-455-3-1002

ART 460. Independent Study—Printmaking. (1-5) I, II, S. Work offered in printmaking after competency has been achieved. Personal development is emphasized. ART-460-3-1002

ART 465. Independent Study—Sculpture. (1-5) I, II, S. Work offered in sculpture after competency has been achieved. Personal development is emphasized. ART-465-3-1002

ART 470. Independent Study—Water Color. (1-5) I, II, S. Work offered in water color after competency has been achieved. Personal development is emphasized. ART-470-3-1002

Undergraduate and graduate credit in minor field

ART 545. Twentieth Century Art History I. (3) I. Origins and development of twentieth century art from 1890 to 1914. Pr.: ART 195 or ART 196. ART-545-0-1003

ART 550. Twentieth Century Art History II. (3) II. Origins and development of twentieth century art from 1914 to 1950. Pr.: ART 195 or ART 196. ART-550-0-1003

ART 560. Art for Exceptional Children. (3) I, II. A study of the knowledge and methods of utilizing art concepts and art activities by the elementary teacher to develop and enhance the learning experiences of exceptional children, including the disadvantaged, physically handicapped, mentally retarded, and emotionally disturbed. Six hours lab. Pr.: PSYCH 110. Same as EDUC 560. ART-560-1-0-0831

ART 565. Ceramics II. (3) I, II, S. Advanced work on potter's wheel combined with hand-built forms. Consideration of simple kiln design, firing techniques and procedures using various fuel burning kilns. Six hours lab. May be taken for four semesters. Pr.: ART 265. ART-565-1-0-1002

ART 570. Painting II. (3) I, II, S. Continuation of Painting I. Emphasis on a more extensive understanding of concepts about painting which will lead to the development of a wider range of personal experience and expression. Six hours lab. Pr.: ART 245. ART-570-1-0-1002

ART 575. Graphic Design and Illustration. (3-4) I, II, S. Problems in layout design and illustration for newspapers, magazines, and general advertising. Six hours lab. May be taken for four semesters. Final semester will include a portfolio project. Pr.: ART 205, 290, or consent of instructor. ART-575-1-0-1002

ART 585. Crafts for Children. (3) II. Studio experiences in crafts related to elementary school age children. Emphasis will be directed toward creative development with craft materials and processes. Pr.: ART 170 and consent of instructor. ART-585-1-0-1002

ART 602. Art Since 1950. (3) I, II, S. Art movements beginning with Abstract Expressionism and continuing through Pop, Op, Minimal and Conceptual art movements up to the present time. Pr.: ART 195 or ART 196. ART-602-0-1003

ART 604. Greek Art History. (3) I, II, S. The art of classical Greece, from its Aegean origins through the Hellenistic period. Pr.: ART 195 or ART 196. ART-604-0-1003

ART 612. Renaissance Art History. (3) I, II. Renaissance art of Northern and Southern Europe in the fifteenth and sixteenth centuries, with a brief discussion of its fourteenth century origins. Pr.: ART 195 or ART 196. ART-612-0-1003

ART 622. Baroque Art History. (3) I, II. The development of the Baroque period in Northern and Southern Europe, from its beginnings in the early seventeenth century to the Rococo style of the eighteenth century. Pr.: ART 195 or ART 196. ART-622-0-1003

ART 632. The Development of American Art. (3) I, II, S. American art from the Colonial period to the beginnings of Abstract Expressionism in the early 1940s, with major emphasis on the late nineteenth and early twentieth century developments. Pr.: ART 195 or ART 196. ART-632-0-1003

ART 634. History of Modern Sculpture. (3) I, II, S. Directions in sculpture since the time of Rodin. Pr.: ART 195 or ART 196. ART-634-0-1003

ART 642. Nineteenth Century Art History. (3) I, II. Painting, sculpture, and architecture of the late eighteenth and nineteenth centuries, with emphasis on the art of France. Pr.: ART 195 or ART 196. ART-642-0-1003

ART 654. Women in Art. (3) I, II, S. The work of women artists from early Middle Ages to the twentieth century, with emphasis on the contemporary period. Pr.: ART 195 or ART 196. ART-654-0-1003

ART 662. Southwestern Indian Arts and Culture. (3) I, II, S. The development of Southwestern Indian silver-smithing, weaving, pottery, basketry, and painting from the prehistoric period through the twentieth century. Pr.: ART 195 or ART 196. ART-662-0-1003

Undergraduate and graduate credit

ART 600. Advanced Drawing. (3-5) (Credits over three hours must be approved by the instructor.) I, II, S. Upper level drawing course with increased demands placed on the individual's manual abilities, conceptual development, and personal motivation. Lectures and problems directed toward an understanding of the historical development of drawing as well as investigations of contemporary attitudes. May be taken for four semesters. Pr.: ART 225, 240. ART-600-1-0-1002

ART 605. Ceramic Kilns (2) Alternate. Principles in design, construction, and the use of various fuels in the operation of up-draft, down-draft, and cross-draft kilns with single and multiple chambers. Pr.: ART 265. ART-605-1-0-1002

ART 610. Figure Drawing II. (3) I, II, S. Continuation of Figure Drawing I, with emphasis on individual expression. Six hours lab. May be taken for four semesters. Pr.: ART 225. ART-610-1-0-1002

ART 615. Figure Painting. (3) I, II. Painting from the human figure with oil and plastic media. Six hours lab. May be taken for two semesters. Pr.: ART 245, 610. ART-615-1-0-1002

ART 620. Water Color II. (3) I, II, S. Continuation of Water Color I. Emphasis on individual expression within limitations of medium. Six hours lab. May be taken for two semesters. Pr.: ART 220. ART-620-1-0-1002

ART 625. Independent Study-Art Education. (1-5) I, II, S. Work offered in art education after competency has been achieved. Personal development is emphasized. Pr.: Full sequence of courses related to art education subject matter. ART-625-3-1002

ART 630. Lithography. (3) I, II, S. Advanced work in lithography. Six hours lab. May be taken for four semesters. Pr.: ART 235 (emphasis on lithography). ART-630-1-0-1002

ART 635. Printmaking II. (3) I, II, S. Advanced work in blockprints, serigraphy, lithography, and intaglio. Six hours lab. May be taken for four semesters. Pr.: ART 235. ART-635-1-0-1002

ART 645. Sculpture II. (3) I, II, S. Emphasis on artistic development through exploratory experiences in the various media. Introduction to foundry techniques and welding processes. Nine hours lab. May be taken for four semesters. Pr.: ART 230. ART-645-1-0-1002

ART 650. Painting III. (3-5) I, II, S. Continuation of Painting II. Emphasis on individual directions in painting to attain personal expression and competency. Primarily for undergraduate painting majors. May be taken for four semesters. Pr.: ART 570. ART-650-1-0-1002

ART 655. Metalsmithing Techniques. (3) I, II, S. Surface embellishment, container construction of various techniques, linkage, and mechanical problems will be explored in addition to stone setting. Nine hours lab. May be taken for three semesters. Pr.: ART 270. ART-655-1-0-1002

ART 660. Sculpture III. (3-5) I, II, S. Continuation of Sculpture II. Further exploration of media and technique, emphasizing the development of individual direction and expression. Primarily for undergraduate sculpture majors. May be taken for four semesters. Pr.: ART 580. ART-660-1-0-1002

ART 665. Ceramics III. (3) I, II. Individual exploration and further development of ceramic design and glaze technology; continuation of kiln design and construction. Six hours lab. May be taken for three semesters. Pr.: ART 565. ART-665-1-0-1002

ART 670. Ceramics IV. (2) I, II. Clay and glaze analysis and calculations. Study of raw materials and their characteristics as used in clay and glaze formulations. One hour lec. and two hours lab. Pr.: ART 665. ART-670-1-0-1002

ART 675. History of Ceramics. (3) II. History and development of ceramics; study of the use of pottery and other aspects of ceramics from earliest known records to present day. Use of slides and other visual materials. Pr.: ART 195 or 196. ART-675-0-1003

ART 680. Metals Workshop. (3-5) I, II, S. A number of metalsmithing techniques will be explored by the upper division student with emphasis placed on experimental problems and possibilities. The development of an individual point of view will predominate throughout the course. May be repeated twice. Pr.: ART 655. ART-680-1-0-1002

ART 685. Advanced Independent Study Design. (Var.) I, II, S. Advanced work in design-related subjects. Pr.: Full sequence of courses related to problem subject matter. ART-685-3-1002

ART 690. Techniques in Teaching Art. (Var.) I, S. Lectures and class discussion of methods, consideration of suitable laboratory equipment, use of illustrative material, and preparation of courses of study. Pr.: Twelve hours in Art or consent of instructor. ART-690-0-0831

ART 695. Topics in Art History. (Var.) I, II, S. Independent exploration in selected problems in art history. Pr.: Twelve hours art history. ART-695-3-1003

Graduate credit

ART 830. Graduate Sculpture Studies. (Var.) I, II, S. Advanced creative work with emphasis on technical and visual research. Pr.: Graduate standing in Art. ART-830-3-1002

ART 835. Graduate Drawing Studies. (Var.) I, II, S. Advanced creative work with emphasis on technical and visual research. Pr.: Graduate standing in Art. ART-835-3-1002

ART 845. Graduate Painting Studies. (Var.) I, II, S. Advanced creative work with emphasis on technical and visual research. Pr.: Graduate standing in Art. ART-845-3-1002

ART 855. Graduate Printmaking Studies. (Var.) I, II. Advanced creative work in any of the printmaking areas with emphasis on technical and visual research. Pr.: Graduate standing in Art. ART-855-3-1002

ART 865. Graduate Ceramics Studies. (Var.) I, II. Advanced creative work with emphasis on technical and visual research. Pr.: Graduate standing in Art. ART-865-3-1002

ART 875. Graduate Metalsmithing and Jewelry Studies. (Var.) I, II, S. Advanced creative work with emphasis on technical and visual research. Pr.: Graduate standing in Art. ART-875-3-1002

ART 885. Graduate Independent Study. (1-5) I, II, S. Advanced individual work offered in studio areas of ceramics, graphic design, drawing, painting, printmaking, sculpture, and metalsmithing and jewelry. ART-885-3-1002

ART 899. Research in Art. (Var.) I, II, S. Research which may form the basis for the master's of fine art thesis or report. Pr.: Graduate standing in Art. ART-899-4-1002

Biochemistry

David J. Cox,* head of department

Professors Burkhard,* Clegg,* Cox,* Hedgcoth,* Koeppe,* Kramer,* Nordin,* Reeck,* and Roche;* Associate Professors Cunningham,* Davis,* Klopfenstein,* and Mueller;* Assistant Professor Muthukrishnan;* Emeriti: Professors Mitchell, Parrish, and Ruliffson.

Biochemistry bridges the disciplines of biology and chemistry. A sound foundation in both disciplines as well as appropriate courses in calculus and physics are required. The aims of biochemistry are to provide an understanding of the structural and functional relationships of chemical constituents of cells and the role that they play in the processes of life.

Undergraduate study

The Department of Biochemistry offers work leading to bachelor of arts and bachelor of science degrees with majors in biochemistry. The B.A. degree is designed to prepare students for professional careers in biochemistry or entry in graduate biochemistry training programs.

The requirements for the B.A. degree with a major in biochemistry include the general requirements of the College of Arts and Sciences plus the following:

BIOCH 100	Biochemistry Orientation	1
CHM 220	Chemical Principles I **and**	5
CHM 250	Chemical Principles II	5
	or	
CHM 210	Chemistry I **and**	4
CHM 230	Chemistry II **and**	4
CHM 271	Chemical Analysis	4
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry Laboratory	2
CHM 550	Organic Chemistry II	3
BIOCH 655	Biochemistry I	3
BIOCH 665	Biochemistry II	3
BIOCH 522	General Biochemistry Laboratory	2
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
BIOL 198	Principles of Biology	4
	Biological science electives	8

These science courses satisfy the mathematics and natural sciences requirements shown in the general requirements for the B.A. degree.

The requirements for the B.S. degree with a major in biochemistry include the general requirements of the College of Arts and Sciences plus the following:

BIOCH 100	Biochemistry Orientation	1
CHM 220	Chemical Principles I **and**	5
CHM 250	Chemical Principles II	5
	or	
CHM 210	Chemistry I **and**	4
CHM 230	Chemistry II **and**	4
CHM 271	Chemical Analysis	4
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry Laboratory	2
CHM 550	Organic Chemistry II	3
BIOCH 655	Biochemistry I	3
BIOCH 665	Biochemistry II	3
BIOCH 656	Biochemistry I Laboratory	2
BIOCH 666	Biochemistry II Laboratory	2
CHM 585	Physical Chemistry I	3
CHM 595	Physical Chemistry II	3
	Upper division biochemistry or chemistry electives (1 hour of which must be BIOCH 799, Problems in Biochemistry)	3
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
MATH 222	Analytic Geometry & Calculus III	4
PHYS 213	Engineering Physics I **and**	5
PHYS 214	Engineering Physics II	5
	or	
PHYS 113	General Physics I **and**	4
PHYS 114	General Physics II	4
BIOL 198	Principles of Biology	4
	Biological science electives	8
	Biology, statistics, or computer science elective **and**	3-4
	One year of either German, French, or Russian.	

The science courses in this list satisfy the natural science and quantitative reasoning requirements shown in the general requirements for the B.S. degree.

Transfer students

Community college students who plan to transfer into either of the biochemistry curricula at the junior level should take the following science courses during their first two years of college:

A year of freshman chemistry—lecture and laboratory
A semester of analytical chemistry—lecture and laboratory
A year of organic chemistry—lecture and laboratory
A year of analytic geometry and calculus
A year of biology—lecture and laboratory

Completion of these science courses should allow students to go directly into biochemistry and advanced biology courses upon entry into a biochemistry curriculum. For those planning to complete the B.S. requirements, it is advisable to have completed all three of the required semesters of analytic geometry and calculus before the junior year.

Graduate study

The Department of Biochemistry, as a participant in the interdepartmental Graduate Biochemistry Group, offers work leading to the master of science and doctor of philosophy degrees with majors in biochemistry. See the Graduate School section for further details.

The Department of Biochemistry also participates in interdepartmental programs in animal science leading to the master of science and doctor of philosophy degrees with majors in animal nutrition, and in food science leading to the master of science and doctor of philosophy degrees with majors in food science. See the Graduate School section for further details.

Courses in biochemistry

Undergraduate credit

BIOCH 100. Biochemistry Orientation. (1) I. Discussion of biochemistry as a discipline in the life sciences. BIOCH-100-0-0414

BIOCH 101. Biochemistry Colloquium. (2) I, II. Offered by Telenet. Topics in biochemistry chosen to illustrate current research of scientists and methods chosen to study biological problems from a biochemical point of view. At each offering of this course a syllabus will be available giving the topics to be studied and the details of administration of the course. May be repeated once. Not open to biochemistry majors. BIOCH-101-0-0414

BIOCH 110. Biochemistry and Society. (3) II. A cultural and environmental approach to biochemical compounds and circumstances affecting man. Topics to be discussed include compounds of biochemical interest, biochemical evolution, food additives, heavy metals, drugs, and certain control chemicals, e.g., pesticides. Intended for non-science majors. BIOCH-110-0-0414

BIOCH 120. Introductory Organic and Biological Chemistry. (5) I, II, S. For students in home economics, nursing, and other areas desiring an integrated organic and biochemistry course to provide an understanding of carbohydrates, proteins, lipids, and of digestive and metabolic systems. Three hours lec. and six hours lab a week. Pr.: CHM 110. BIOCH-120-1-0414

BIOCH 201. Elementary Biochemistry. (3) I, II. An elementary treatment of the chemistry and metabolism of carbohydrates, lipids, proteins, and nucleic acids. Pr.: CHM 190. BIOCH-201-0-0414

BIOCH 202. Elementary Biochemistry Laboratory. (2) I, II. A laboratory course to accompany BIOCH 201. Six hours lab a week. Pr.: BIOCH 201 or conc. enrollment. BIOCH-202-1-0414

BIOCH 290. Biochemistry Seminar. (0-3) I, II. Lectures, discussions, and activities of biochemical interest. BIOCH-290-0-0414

BIOCH 300. Sophomore Honors Seminar in Biochemistry. (3) II. Lecture, guided reading, and discussion of topics of general interest in biochemistry. Topics will vary depending on the interests and backgrounds of students enrolled. Pr.: Freshman Honors Seminar. BIOCH-300-0-4900

BIOCH 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the Arts and Sciences Honors Program. May be used by honors students to satisfy B.S. requirement for BIOCH 799. Pr.: BIOCH 665 or conc. enrollment. BIOCH-499-4-0414

Undergraduate and graduate credit in minor field

BIOCH 510. General Plant Biochemistry. (4) I. A general biochemistry course with strong emphasis on metabolic pathways and processes unique to plants. Three hours lec. and three hours lab a week. Pr.: CHM 190 or 350. BIOCH-510-1-0414

BIOCH 521. General Biochemistry. (3) I, II, S. A basic study of the chemistry and metabolism of carbohydrates, lipids, proteins, and nucleic acids, but at a more advanced level than BIOCH 201. Pr.: CHM 350. BIOCH-521-0-0414

BIOCH 522. General Biochemistry Laboratory. (2) I, II, S. A one-semester laboratory course with experiments relating to carbohydrates, lipids, proteins, nucleic acids, and enzymes. Six hours lab a week. Pr.: CHM 351 and BIOCH 521 or conc. enrollment, or BIOCH 665 or conc. enrollment. BIOCH-522-1-0414

Undergraduate and graduate credit

BIOCH 655. Biochemistry I. (3) I. An introduction to physical methods, kinetics, and thermodynamics of biochemical reactions and bioenergetics, chemistry of proteins and amino acids, carbohydrate chemistry, and metabolism. BIOCH 655 and 665 are for students interested in a two-semester comprehensive coverage of biochemistry. For a one-semester course, enroll in BIOCH 521. Pr.: *Chemical analysis, one year of organic chemistry, differential and integral calculus. BIOCH-655-0-0414

BIOCH 656. Biochemistry I Laboratory. (2) I. An intensive laboratory course to accompany BIOCH 655. BIOCH 656 and 666 are sequential courses for students interested in a two-semester comprehensive coverage of experiments in biochemistry. For a one-semester laboratory course, enroll in BIOCH 522. Six hours lab a week. Pr.: *BIOCH 655 or conc. enrollment. BIOCH-656-1-0414

BIOCH 665. Biochemistry II. (3) II. Continuation of BIOCH 655; lipid chemistry and metabolism, amino acid metabolism, nutrition, nucleic acid chemistry and metabolism, integration of biochemical pathways and metabolic control mechanisms. Pr.: *BIOCH 655. BIOCH-665-0-0414

*Non-majors lacking these prerequisites should obtain consent of instructor before enrollment.

BIOCH 666. Biochemistry II Laboratory. (2) II. A continuation of CHM 656. Six hours lab a week. Pr.: *BIOCH 656 and 665 or conc. enrollment. BIOCH-666-1-0414

BIOCH 700. Advanced Topics in Plant Biochemistry. (3) I. Offered 1984-85 and alternate years or on sufficient demand. An advanced treatment of topics of current interest in plant biochemistry, including photosynthesis and carbon metabolism, nitrogen fixation and nitrogen metabolism, structure and function of the higher plant genome and production of material of economic interest. Pr.: *BIOCH 510 or 521 or 665. BIOCH-700-0-0414

BIOCH 701. Plant Biochemistry Laboratory. (1). On sufficient demand. Practical experience in techniques necessary in dealing with plant materials for the isolation of active enzymes and analysis of constituents. Pr.: *BIOCH 700 or conc. enrollment, and one of the following: BIOCH 510 or 522 or 656. BIOCH-701-1-0414

BIOCH 790. Physical Biochemistry. (3) I. A survey of biophysical methods most frequently encountered in biochemistry and related disciplines. The course emphasizes principles underlying methods used to determine the molecular weight and shape of biopolymers, and techniques used to detect conformational changes in polynucleotides, proteins, and polysaccharides. Pr.: *Calculus, a course in physical chemistry, BIOCH 655, 656, 665, and 666. BIOCH-790-1-0414

BIOCH 799. Problems in Biochemistry. (Var.) I, II, S. Problem may include laboratory and/or library work in various phases of biochemistry, agricultural chemistry, or nutrition. Pr.: *Background adequate for problem undertaken. BIOCH-799-3-0414

Graduate credit

BIOCH 806. Biochemistry Seminar. (0-1) I, II. Seminar for graduate students in biochemistry. BIOCH-806-0-0414

BIOCH 840. Intermediary Metabolism. (3) II, S. On sufficient demand. Metabolic role of carbohydrates, lipids, proteins and amino acids, purines, pyrimidines, vitamins, minerals, and hormones; biological oxidations: mechanisms of energy production and utilization. Pr.: *BIOCH 656 and 665. BIOCH-840-0-0414

BIOCH 845. Hormones. (3) I. Offered 1984-85 and alternate years or on sufficient demand. The structure, biosynthesis, biochemical role, metabolism, and interrelations of hormones in vertebrates and invertebrates. Pr.: BIOCH 665. BIOCH-845-0-0414

BIOCH 899. Research in Biochemistry I. (Var.) I, II, S. Research in biochemistry, agricultural chemistry, and nutrition, which may be used for preparation of the M.S. thesis. Pr.: *Sufficient training for research undertaken. BIOCH-899-4-0414

BIOCH 910. Lipids. (2) II. Offered 1985-86 and alternate years. Chemistry of plant and animal lipids, their occurrence, metabolism, and industrial uses. Pr.: *BIOCH 665. BIOCH-910-0-0414

*Non-majors lacking these prerequisites should obtain consent of instructor before enrollment.

BIOCH 920. Nucleic Acids. (2) II. Offered 1985-86 and alternate years. Structure and function of nucleic acids: structures and properties of DNA, RNA, and chromatin; recombinant DNA techniques; mutagenesis and carcinogenesis; protein-nucleic acid interactions; structural influences on replication, transcription, translation, and regulation. Pr.: BIOCH 665. BIOCH-920-0-0414

BIOCH 930. Proteins. (2) I. Offered 1985-86 and alternate years. Lectures and readings on the chemical nature of proteins; fractionation; purification, structure, chemical and physical properties of proteins and amino acids. Pr.: *BIOCH 656 and 665. BIOCH-930-0-0414

BIOCH 940. Chemistry of Carbohydrates. (2) I. Offered 1984-85 and alternate years. Lectures and readings on structural chemistry of carbohydrates, their general properties, biological and chemical reactions, and the methods of characterization. Pr.: *BIOCH 656 and 665. BIOCH-940-0-0414

BIOCH 950. Enzyme Chemistry. (3) II. Offered 1984-85 and alternate years. The following properties of enzymes are considered: structure, specificity, catalytic power, mechanism of action, multienzyme complexes, kinetics, regulation and pacemaker properties in multienzyme systems. Pr.: *BIOCH 665. BIOCH-950-0-0414

BIOCH 999. Research in Biochemistry II. (Var.) I, II, S. Research in biochemistry, agricultural chemistry and nutrition, which may be used for preparation of the Ph.D. thesis. Pr.: Sufficient training for research undertaken. BIOCH-999-4-0414

Division of Biology

T.C. Johnson, director

Professors Barkley,* Bode,* Conrad,* Consigli,* Denell,* Fina,* Hulbert,* Iandolo,* T. Johnson,* Kramer,* Marzolf,* Pittenger,* Robel,* Roufa,* C. Smith,* Spooner,* and Zimmerman;* Associate Professors Center,* Kammer,* Kelly,* Klaassen,* Marchin,* Takemoto,* Tomb,* Urban,* Weis,* Wilson,* and Wong;* Assistant Professors Fortner,* Guikema,* Kaufman,* Perchellet,* Reichman,* Rintoul,* Seastedt,* and Williams;* Instructors Hook, Kundiger, Paulsen, and A. Smith; Emeriti: Professors Goodrich,* Hansen,* Pady,* and Wimmer;* Associate Professors Lockhart,* McCracken,* and Newcomb.*

Undergraduate study

The biology undergraduate requirements provide students a basic understanding of biological principles and methods, and allow opportunity for students to build on that base by further intensive or extensive study.

Course offerings and curricula accurately reflect both recent developments in the field of biology and changing requirements of students. Undergraduate majors are specifically offered in biology, microbiology, and fisheries and wildlife biology, plus the professional (paramedical) and pre-professional areas. Students majoring in areas of the Division of Biology are assigned advisors to assist in planning their academic programs. Course offerings and degree requirements are sufficiently broad to allow great flexibility in tailoring a program of study to the interests and needs of an individual student. Undergraduate curriculum planning, including choice of areas of emphasis and elective courses, is ultimately the responsibility of students in consultation with their advisors.

Biology degree

Students may select a program leading to a B.A. or B.S. degree.

In addition to the general requirements of the College of Arts and Sciences, courses required for a bachelor's degree in biology are:

BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
BIOL 430	Population Biology	4
BIOL 540	Molecular Biology	3
BIOL 440	Cell Biology	3

Plus 15 hours of elective credits taken in the Division of Biology (number 400 or higher) which must include two courses providing a laboratory experience.

The following courses given by other departments also are required:

PHYS 113	General Physics I **and**	4
PHYS 114	General Physics II	4
	or	
PHYS 213	Engineering Physics I **and**	5
PHYS 214	Engineering Physics II	5
MATH 220	Analytic Geometry & Calculus I	4

Note: MATH 100, 150, or two years of high school algebra and one semester of trigonometry are prerequisite to MATH 220, Analytic Geometry and Calculus 1.

CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
	or	
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry I Laboratory	2
BIOCH 521	General Biochemistry	3
	or	
BIOCH 655	Biochemistry I	3
BIOCH 665	Biochemistry II	3

Students contemplating graduate school are encouraged to take additional work in mathematics, computer science, statistics, and a modern foreign language.

Microbiology degree

The degree may be either a B.A. or a B.S. depending upon which electives are chosen by the student and advisor. The major in microbiology consists of the general requirements of the College of Arts and Sciences, plus the following courses in the Division of Biology:

BIOL 198	Principles of Biology	4
BIOL 555	Microbiology	5
BIOL 610	Bacteriology of Human Diseases	5
BIOL 670	Immunology	4
BIOL 675	Genetics of Microorganisms	3
BIOL 690	Microbial Physiology Lecture	3
BIOL 691	Microbial Physiology Laboratory	2
BIOL 730	General Virology	3

Plus eight additional hours of microbiology of the student's choice. Only one hour of practicum credit may be counted as elective biology hours toward the microbiology degree.

The following courses given by other departments also are required:

MATH 220	Analytic Geometry & Calculus I	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 271	Chemical Analysis	4
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry I Laboratory	2
CHM 550	Organic Chemistry II	3
	General Biochemistry Lecture	3
	or	
BIOCH 655	Biochemistry I	3
BIOCH 665	Biochemistry II	3
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4

Students contemplating graduate school should also consider taking a modern foreign language.

Fisheries and wildlife biology

This curriculum has three options: fisheries biology, wildlife biology, and general. In addition to or in place of (oral communication only) the requirements of the College of Arts and Sciences, these courses are required in each of the options.

From the Division of Biology:

BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
BIOL 430	Population Biology	4
BIOL 433	Wildlife Conservation	3
BIOL 631	Ecology	3
BIOL 632	Ecology Laboratory	1
BIOL 555	Microbiology	5

These courses from other departments also are required for each option:

PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
STAT 340	Biometrics I	3
MATH 220	Analytic Geometry & Calculus I	4

Note: MATH 100, 150, or two years of high school algebra and one semester of trigonometry are prerequisite to MATH 220 Analytic Geometry and Calculus I.

CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
	or	
CHM 531	Organic Chemistry I **and**	3
CHM 550	Organic Chemistry II	3
SPCH 106	Oral Communication IA	3
AGRON 305	Soils	4

Additional requirements for the fisheries biology option include:

STAT 341	Biometrics II	3
BIOL 550	Lower Plants	3
BIOL 542	Ichthyology	3
BIOL 696	Fisheries Management	4
BIOL 680	Aquaculture	2
BIOL 470	Introductory Limnology **and**	4
BIOL 513	Physiological Adaptations of Animals	3
BIOL 514	Physiological Adaptations of Animals Lab	1

Additional requirements for the wildlife biology option include:

STAT 341	Biometrics II	3
BIOL 551	Taxonomy of Flowering Plants	4
BIOL 543	Ornithology	3
BIOL 544	Mammalogy	3
BIOL 684	Wildlife Management	3
BIOL 685	Wildlife Management Techniques	3
ENTOM 312	Entomology	2
ENTOM 313	Entomology Laboratory	1
BIOL 513	Physiological Adaptations of Animals **and**	3
BIOL 514	Physiological Adaptations of Animals Laboratory	1
	Plant science electives 300 or above level	3

Additional requirements for the general option include:

BIOL 684	Wildlife Management	3
BIOL 500	Plant Physiology	4
	or	
BIOL 513	Physiological Adaptations of Animals	3
BIOL 514	Physiological Adaptations of Animals Laboratory	1
	Plant science electives 300 or above level	3
	Fisheries electives	3
BIOL 542	Ichthyology	3
BIOL 543	Ornithology	3
BIOL 544	Mammalogy	3

The minimum requirements for graduation under the general option do not meet the qualifications for certification as either a wildlife biologist or fisheries biologist for federal employment nor do they qualify the student for professional certification by The Wildlife Society or the American Fisheries Society. Students electing this option who wish to qualify for one or more of these certification programs should consult their academic advisors about the additional courses needed for such certification.

Professional and pre-professional curricula

Students preparing to seek admission to medical, dental, veterinary, or similar professional schools may major in biology (or other academic discipline) provided the specific pre-professional requirements are met. Such students are encouraged to contact the appropriate pre-professional advisor in the dean's office as early in their academic careers as possible. This will permit the planning of a proper academic program for the students' professional goals.

The Division of Biology is intimately associated with several professional degree programs which are officially organized by the office of the dean of the College of Arts and Sciences. These programs are physical therapy, medical technology, and pre-nursing. Students with professional interests in these fields should contact either the Division of Biology office or the dean's office.

Special advisement is offered in connection with the College of Education for students preparing to be biology teachers in the secondary schools. For specific certification requirements in secondary education, please see the education section of this catalog.

Graduate study

The division offers both the M.S. and the Ph.D. in numerous areas of biology. Degrees are specifically offered in biology and microbiology and through interdepartmental programs in animal breeding, biochemistry, and genetics. Graduate programs in the division generally relate to one of the five sections into which the division faculty is divided according to research interests and teaching interactions. These are: molecular biology and genetics, microbiology and immunology, developmental biology and physiology, systematics and ecology, and virology and oncology.

Graduate students may establish research advisory committees with faculty members from several of these sections as well as from appropriate departments outside of biology, thereby gaining a considerable latitude of expertise in developing the program of study. It should be noted that a graduate student's education is self-determined in consultation with the major professor and advisory committee; therefore the program of study is always designed to fit the student's particular interests and needs.

Courses in biology

Undergraduate credit

BIOL 107. Biological Science Colloquium. (2) I, II. Offered by Telenet. Topics in biological science chosen to illustrate current research of scientists and methods used to study the biological world. At each offering of this course a syllabus will be available giving the topics to be studied and the details of administration of the course. May be repeated once. Not open to biology majors. BIOL-107-0-0401

BIOL 198. Principles of Biology. (4) I; II, S. An introductory course concerned with the behavior of molecules, cells, organisms, and populations in an ecosystem-bound and evolving world. Audiotutorial format, equiv. to two hours lec., one hour rec., and three hours lab a week. BIOL-198-1-0401

BIOL 201. Organismic Biology. (5) I, II. A study of the structure and function of organisms with special attention paid to the phylogenetic origins of taxonomic groups and the integration of their structural systems. Three hours lec. and four hours lab. Pr.: BIOL 198 or equiv. BIOL-201-1-0401

BIOL 210. General Botany. (4) I, II. Plant groups and their evolutionary development. Physiology, anatomy, ecology, identification of seed plants, and economic applications. Two hours lec. and six hours lab a week. BIOL-210-1-0402

BIOL 220. Bacterlology and Man. (3) I, II. Fundamental concepts of microbial activities, the techniques for studying them, modes of action, role in natural and man-made ecosystem, with special emphasis on relationships to man. Not for biology or microbiology majors. Two hours lec. and three hours lab a week. Pr.: One course in Biology, one course in Chemistry. BIOL-220-0-0403

BIOL 222. Fleld Ornithology. (1) II. In odd years. Identification of bird species in the field and the illustration of attributes of avian behavior and ecology. One three-hour lab a week. Pr.: Sophomore standing. BIOL-222-1-0499

BIOL 240. Structure and Functlon of the Human Body. (6) I, II. Anatomy and physiology of the organ systems of the body. Course is directed toward non-biology majors. Four hours lec. and two three-hour lab sessions a week. Pr.: BIOL 198. BIOL-240-1-0410

BIOL 303. Ecology of Envlronmental Problems. (3) II. Principles of ecology and their application to such problems as pollution, human population growth, and land use planning. Two hours lec. and one hour discussion a week. Pr.: Two courses in natural science. BIOL-303-0-0420

BIOL 310. Biology and the Future of Man. (3) II. Discussions of recent developments in biological research and their impact on the social, moral and ethical dimensions of man's existence. Topics covered include human reproduction, human genetics, aging, death, and organ transplantation. Three hours lec. a week. Pr.: Junior standing. BIOL-310-0-0401

BIOL 320. Economic Botany. (3) II. Origin and uses of cultivated plants useful to humans, especially grains, legumes, spices, beverage plants, fibers and dyes. Pr.: BIOL 198 or BIOL 210. BIOL-320-0-0402

BIOL 365. Practicum in Biology. (1-4) I, II. Experimental approaches to learning biology through teaching. One hour rec. a week plus three-nine hours lab a week. Pr.: Permission of instructor and credit with superior performance in the course in which the student will be involved. BIOL-365-2-0401

BIOL 397. Topics in Biology. (1-6) I, II, S. Pr.: Consent of instructor. BIOL-397-2-0401

BIOL 399. Honors Seminar in Biology. (1-3) II. 1984, selected topics. Open to non-majors in the Honors Program. BIOL-399-0-4900

BIOL 400. Human Genetics. (3) I. A course dealing exclusively with human heredity and with those genetic principles that can be illustrated in humans. Pr.: BIOL 198. BIOL-400-0-0422

BIOL 405. Developmental Biology of Animals and Plants. (3) I. Developmental biology and embryology of lower vertebrates, invertebrates, and representative plants. Consideration and comparison of the basic events in their embryogenesis, together with discussion of some mechanisms. A basic course in developmental biology, emphasizing different organisms than those discussed in Embryology (BIOL 510). Does not fulfill pre-vet requirements for higher vertebrate embryology. Pr.: BIOL 198. BIOL-405-0-0427

BIOL 410. Biology of the Cancer Cell. (2) I. Current concepts of cancer biology including roles of cell surfaces, cell division, viruses, self-recognition and chemical carcinogens. Pr.: Two courses in biology. BIOL-410-0-0417

BIOL 430. Population Biology. (4) I. A study of the patterns and processes of inheritance and of changes in gene frequencies and numbers of individuals in interbreeding populations of individuals. Three hours lec. and one hour rec. Pr.: BIOL 201. BIOL-430-0-0420

BIOL 433. Wildlife Conservation. (3) II. An introductory course to the fields of fisheries and wildlife conservation, history of the conservation movement, review of important wildlife species, overview of management concepts, and exposure to wildlife-related issues. Pr.: BIOL 201. BIOL-433-0-0107

BIOL 440. Cell Biology. (3) II. Structure and function of cells and subcellular components. A molecular understanding of cellular physiology will be emphasized. Three hours lec. Pr.: BIOL 201. BIOL-440-0-0417

BIOL 460. Animal Virology Laboratory. (2) II. Laboratory techniques and investigative procedures for the analysis of viral growth in animal cell cultures. This course is intended for undergraduate students only, but is offered in conjunction with General Virology (BIOL 730). Pr.: Conc. enrollment in BIOL 730. BIOL-460-1-0416

BIOL 470. Introductory Limnology. (4) I. Basic ecological principles of aquatic environments. Plants and animals of local streams, rivers, ponds and reservoirs are used to demonstrate the interaction of biological processes with the chemical and physical features of natural aquatic environments. Three hours lec., three hours lab a week; two optional weekend field trips. Pr.: BIOL 198. BIOL-470-1-0420

BIOL 495. Topics in Biology. (1-6) I, II, S. Pr.: Consent of instructor. BIOL-495-2-0401

BIOL 497. Senior Honor Thesis. (2) I, II, S. Open only to seniors in the Arts and Sciences Honors Program. BIOL-497-3-4900

Undergraduate and graduate credit in minor field

BIOL 500. Plant Physiology. (4) I. Detailed consideration of physiological processes of higher plants. Three hours lec. and three hours lab a week. Pr.: BIOL 201 or BIOL 210 and a course in organic chemistry. BIOL-500-1-5-0406

BIOL 505. Comparative Anatomy of Vertebrates. (4) II. Interpretation of vertebrate structure with emphasis on function and phylogeny. Two hours lec. and six hours lab a week. Pr.: BIOL 198. BIOL-505-1-0412

BIOL 510. Embryology. (3) II. Developmental anatomy and physiology of reproduction of birds and mammals. Three hours lec. a week. Pr.: BIOL 198. BIOL-510-1-0427

BIOL 511. Embryology Laboratory. (1) II. One three-hour lab a week. Pr.: BIOL 510 or conc. enrollment. BIOL-511-1-0427

BIOL 513. Physiological Adaptations of Animals. (3) I. Integration of physiological mechanisms as the basis for adaptive responses of animals to different environments. Pr.: BIOL 201 and a course in organic chemistry or biochemistry. BIOL-513-0-0410

BIOL 514. Physiological Adaptations of Animals Laboratory. (1) I. One three-hour lab a week. Pr.: Conc. enrollment in BIOL 513. BIOL-514-1-0-0410

BIOL 520. Microbiology of Foods. (4) I. Microbial phenomena involved in the bacteriology and sanitation of foods. Two hours rec. and four hours lab a week. Pr.: BIOL 555 or equiv. BIOL-520-1-0411

BIOL 526. Human Physiology. (3) II. Functions of various organ systems of mammals, primarily humans. Three hours lec. a week. Pr.: BIOL 198 and a course in biochemistry or organic chemistry. BIOL-526-1-5-0410

BIOL 529. Fundamentals of Ecology. (3) I. Ecosystem structure and function including energy flow; biogeochemical cycling; effect of climate, soil, fire, succession; application of ecological principles to forests, range, agriculture, and man. Two lec. and one discussion a week, plus three half-day field trips. Not for major credit. Pr.: BIOL 201 or 210 and CHM 210. BIOL-529-0-0420

BIOL 540. Molecular Biology. (3) I. An introduction to the synthesis and regulation of DNA, RNA and protein. Mutation and the chromosome are studied at the molecular level. Emphasis is placed on recombinant DNA technology and on the handling of biological information in both higher and lower organisms. Pr.: BIOL 201 and CHM 350. BIOL-540-0-0416

BIOL 542. Ichthyology. (3) II. Classification, morphology, physiology, distribution, and natural history of fishes. Two hours lec. and three hours lab a week. Pr.: BIOL 201. BIOL-542-1-0407

BIOL 543. Ornithology. (3) II. Classification, morphology, physiology, distribution, and natural history of birds. Two hours lec. and three hours lab a week. Pr.: BIOL 201. BIOL-543-1-0407

BIOL 544. Mammalogy. (3) I. Characteristics, evolution, life histories, and ecology of mammals, especially North American game species. Two hours lec. and three hours lab a week. Pr.: BIOL 201. BIOL-544-1-0407

BIOL 545. Human Parasitology. (3) II. Protozoan and helminth parasites of man with lesser emphasis on ectoparasitic arthropods. Emphasis on life cycles, control and laboratory diagnosis. Three hours lec. a week. Pr.: BIOL 201. BIOL-545-0-0411

BIOL 546. Human Parasitology Laboratory. (1) II. Examination of prepared materials and identification of internal parasites of man. Two hours lab a week. Pr.: Conc. enrollment in BIOL 545. BIOL-546-1-0411

BIOL 547. Herpetology. (2) II. In odd years. Classification morphology, physiology, distribution, and natural history of amphibians and reptiles. One hour lec. and three hours lab a week. Pr.: BIOL 201. BIOL-547-1-3-0407

BIOL 550. Lower Plants. (3) II. In odd years. Morphology, adaptive mechanisms, and evolutionary relationships of the cellular and vascular cryptograms. Two hours lec. and one three-hour lab a week. Pr.: BIOL 201 or 210. BIOL-550-1-0402

BIOL 551. Taxonomy of Flowering Plants. (4) I. Morphology, taxonomy, and biogcography of the vascular plants. Two hours lec. and two three-hour labs a week. Pr.: BIOL 201 or 210. BIOL-551-1-0402

BIOL 555. Microbiology. (5) I, II. Microorganisms; their morphology, physiology, classification, and importance. Three hours lec. and four hours lab a week. Pr.: One course in biology and a course in organic chemistry. BIOL-555-1-0411

Undergraduate and graduate credit

BIOL 605. Radiation Safety in the Research Laboratory. (1) I. Principles of radioactive safety and radioisotope handling, licensing procedures, and laboratory techniques. Pr.: BIOL 198 or 555, CHM 210, or PHYS 113. BIOL-605-1-0423

BIOL 610. Bacteriology of Human Diseases. (5) I. Three hours lec. and six hours lab a week. Pr.: BIOL 555 or equiv. BIOL-610-1-0411

BIOL 615. Cytogenetics. (4) I. In even years. Chromosome structure and mechanics, cytotaxonomy and karyotypic analysis in eukaryotes. Two hours lec. and six hours lab a week. Field trips. Pr.: BIOL 430 or a course in genetics. BIOL-615-1-3-0422

BIOL 620. Evolution. (3) II. In even years. A study of the theory of evolution including its historical and social implications. Three hours lec. a week. Pr.: BIOL 430 or a course in genetics. BIOL-620-0-0422

BIOL 625. Animal Parasitology. (3) I. (Not offered 1984-85). Biology, pathology, and prophylaxis of the principal external and internal parasites of domestic animals. Two hours lec. and three hours lab a week. Pr.: BIOL 198 and junior standing. BIOL-625-1-0411

BIOL 630. Animal Behavior. (3) I. In odd years. The study of the mechanisms, ontogeny and evolution of social and non-social behavior from an adaptive viewpoint. Two hours lec. and one hour discussion of assigned readings per week. Pr.: BIOL 430. BIOL-630-1-0420

BIOL 631. Ecology. (3) II. Descriptive and mathematical understanding of ecosystem structure and dynamics, including succession, energy flow, and nutrient cycling. Pr.: BIOL 430. BIOL-631-0-0420

BIOL 632. Ecology Laboratory. (1) II. Laboratory and field experiences with ecological problems. Pr.: STAT 340 or equiv., BIOL 631 or conc. enrollment. BIOL-632-1-0420

BIOL 634. Soil Microbiology. (3) I. Microbial population of the soil and its role in soil fertility. Pr.: BIOL 555 or equiv.; CHM 351 or equiv. BIOL-634-1-0411

BIOL 635. Specialized Cell Functions. (3) I. *In vitro* cell and organ culture techniques as tools for differentiation and specializations studies. Emphasis on mammalian cell culture systems with some study of plant cell culture. Two hours lec. and one three-hour lab a week. Pr.: BIOL 440. BIOL-635-1-0417

BIOL 640. Introductory Mycology. (4) I. Comparative morphology, classification, and life cycles of the fungi. Two hours lec. and six hours lab a week. Pr.: BIOL 201 or 210. BIOL-640-1-0411

BIOL 645. Advanced Field Studies. (1-2). Offered in Intersession only. Different ecosystems and the opportunity to apply classroom knowledge to field biology situations under the guidance of experienced biologists. Pr.: One course in field biology at or above the 400 level. BIOL-645-2-0401

BIOL 651. Molecular and General Genetics. (3) II. A course intended for those who have had an introduction to both Mendelian genetics and the elements of molecular biology. Classical genetics will be reviewed and expanded, and modern concepts of mutation, gene structure, function, and regulation will be considered at the genetic and molecular levels. Pr.: BIOL 450 or an introductory genetics course. BIOL-651-0-0422

BIOL 655. Genetics Laboratory. (3) II. Basic genetic principles of prokaryotic and eukaryotic organisms will be demonstrated through isolation and analysis of gene mutations. Two hours lec. and four hours of lab a week. Pr.: BIOL 430 or a course in genetics. BIOL-655-1-3-0422

BIOL 667. Neurobiology. (4) I. Neuronal mechanisms of coordination in animals, with emphasis on neuronal mechanisms underlying behavior in simple systems. Two hours lec. and two three-hour labs a week. Pr.: BIOL 440. BIOL-667-1-0425

BIOL 670. Immunology. (4) II. Chemical, genetic, and biological properties of the immune response, acquired immunity and antibody production. Pr.: Two courses in biology and a course in biochemistry or equiv. BIOL-670-0-0411

BIOL 671. Immunology Lab. (2) II. Laboratory exercises in Immunology. Pr.: BIOL 670 or conc. enrollment. Three-hour lab a week plus one hour rec. BIOL-671-1-0411

BIOL 675. Genetics of Microorganisms. (3) I. The genetics of bacteria, viruses, and other microorganisms. Both the use of genetics in microbiological studies and the use of microbial systems to investigate basic genetic problems will be covered. Pr.: BIOL 555. BIOL-675-0-0422

BIOL 680. Aquaculture. (2) I. In odd years. Principles and methods of culturing fishes for commercial purposes. Topics of study include: species of fishes used in production, breeding, feeds and feeding of fishes; fish parasites and diseases, environmental requirements, facilities, and potential markets. Pr.: Two courses in biology, two courses in chemistry, and junior standing. BIOL-680-1-0107

BIOL 684. Wildlife Management. (3) II. Concepts of managing wildlife with emphasis on North American game species. Applied population dynamics as they relate to management, historical, and recent deveopments in the field of wildlife management, habitat improvement, and related material. Three hours lec. a week. Pr.: BIOL 430 and 533. BIOL-684-0-0107

BIOL 685. Wildlife Management Techniques. (3) I. Ecology and management techniques. Two hours lec. and three hours lab a week. Pr.: BIOL 430 and 533. BIOL-685-1-0107

BIOL 690. Microbial Physiology. (3) II. The study of bacteria as an integrated biochemical system emphasizing how the biochemical aspects serve the functional properties of cells. Pr.: BIOL 555 and BIOCH 521 or 655. BIOL-690-0-0411

BIOL 691. Microbial Physiology Laboratory. (2) II. Examination of microbial processes by biological and biochemical methods. Six hours a week. Pr.: Conc. enrollment in BIOL 690. Enrollment of students in curricula other than microbiology is by permission of instructor. BIOL-691-1-0411

BIOL 696. Fisheries Management. (4) I. Methods of managing fisheries resources; physical and biological survey methods; methods of aquatic environment improvement; fish population manipulation; management of streams, ponds, and lakes. Three hours lec. and three hours lab a week. Pr.: BIOL 533. BIOL-696-1-0107

BIOL 697. Topics in Biology. (1-6) I, II, S. Pr.: Consent of instructor. BIOL-697-3-0401

BIOL 698. Problems in Biology. (1-8) I, II, S. Pr.: Consent of instructor. BIOL-698-3-0401

BIOL 699. Undergraduate Seminar in Biology. (1) I, II. Pr.: Consent of instructor. BIOL-699-2-0401

BIOL 700. Advanced Plant Physiology I. (3) II. In even years. Modern concepts and areas of research in plant physiology. Respiration, photosynthesis, and water relations of plants. Pr.: An introductory plant physiology course or general biochemistry. BIOL-700-0-0406

BIOL 701. Advanced Plant Physiology II. (3) II. In odd years. Modern concepts and areas of research in plant physiology. Mineral nutrition, translocation, growth, and development of plants. Pr.: An introductory plant physiology course or general biochemistry. Previous enrollment in BIOL 700 is not required. BIOL-701-0-0406

BIOL 705. Advanced Mycology. (3) II. In even years. Study of fungi, with emphasis on structure, identification, classification, phylogeny, and economic importance. One hour lec. and six hours lab a week. Pr.: BIOL 640. BIOL-705-1-0411

BIOL 710. Endocrinology. (3) II. A survey of the glands of internal secretion in vertebrates with emphasis on mechanisms of control of hormone secretion and mechanisms of hormone action. Pr.: BIOL 198 and a course in organic chemistry or biochemistry. BIOL-710-0-0410

BIOL 715. Ecological Impact Assessment. (3) I. Solving problems involving the effect of human activity on the biological environment. Students will identify factors of biological concern and make impact predictions. Pr.: Two 400-level courses in two of the following fields: biological, physical, agricultural, geological, or geographical sciences or equiv. BIOL-715-0-0420

BIOL 720. Evolutionary Ecology. (3) I. In even years. A study of the evolution of population, community, and ecosystem structure. Two hours lec. and one hour rec. a week. Pr.: BIOL 631 or BIOL 662. BIOL-720-0-0420

BIOL 725. Modelling Biological Concepts. (3) I. The use of hypotheses and models in biological research. Modelling of basic concepts such as single-factor and multiple-factor causation. Hypotheses for statistical evaluation. Pr.: MATH 220 or 500 and STAT 320, 330, 340, or 350 or conc. enrollment. BIOL-725-0-0419

BIOL 730. General Virology. (3) II. Theoretical and experimental basis of virology, with emphasis on the role of the virus as a controlling force in cellular biology; principles of host-virus interactions; introduction to use of mammalian cell cultures as the host for virus propagation. Pr.: Twelve hours of biological sciences, including BIOL 555 or equiv. and BIOCH 521 or equiv.; consent of instructor. BIOL-730-1-0411

BIOL 740. Anatomy of Higher Plants. (3) II. In odd years. Structure and development of the various tissues and organs of seed plants. One hour lec. and six hours lab a week. Pr.: BIOL 201 or 210. BIOL-740-1-0402

BIOL 750. Molecular and Cellular Biology. (3) I. A study of the molecular biology of the cell. Regulation, organization, and synthesis of cellular constituents in both prokaryotic and eukaryotic cells will be studied in a comparative manner. Pr.: BIOCH 522 or equiv. and consent of instructor. BIOL-750-0-0417

BIOL 782. Reservoir Limnology. (3) II. Current investigations in aquatic ecology and limnology as they pertain to reservoirs. Great Plains reservoirs will be viewed as systems for investigation of ecological phenomena. Pr.: BIOL 470. BIOL-782-0-0420

Graduate credit

BIOL 810. Growth Regulation in Prokaryotes. (2) I. In even years. The nature, dynamics, and regulation of cell growth and the cell cycle in procaryotes. Pr.: BIOL 555 and BIOCH 522 or equiv. BIOL-810-0-0411

BIOL 815. Plasmid Biology. (2) II. In odd years. The current status of extrachromosomal inheritance in procaryotic cells. Pr.: BIOL 555 and BIOCH 522 or equiv. BIOL-815-0-0411

BIOL 820. The Lytic Bacteriophages. (2) II. In even years. The regulation of gene expression as revealed through genetic and biochemical methods. Emphasis will be placed upon phages T4, T7, T5, and N4 of *Escherichia coli* and SP01 and PBS2 of *Bacillus subtilis*. Pr.: BIOL 555 and BIOCH 522 or equiv. BIOL-820-0-0411

BIOL 830. Advanced Virology. (4) I. Application of current biochemical, biophysical, and biological techniques to the study of viruses, including bacterial viruses (bacteriophage), animal viruses and plant viruses. Pr.: BIOL 730 and consent of instructor. BIOL-830-1-0411

BIOL 840. Molecular Immunology. (3) I. In even years. Lectures and readings covering the chemical and physical properties of antibodies. Pr.: BIOL 670 or equiv. and consent of instructor. BIOL-840-0-0411

BIOL 850. Advanced Topics in Immunology. (1-2) I, II. Current research in immunology. Pr.: BIOL 670 and consent of instructor. BIOL-850-3-0411

BIOL 858. Regulation of Gene Expression. (3) II. An analysis of the mechanisms controlling the expression of genetic information in biological systems of varying complexity. Emphasizes the biochemical, genetic, and physical basis of regulation and development. Pr.: BIOCH 522 or equiv.; a basic knowledge of molecular biology and consent of instructor. BIOL-858-0-0422

BIOL 865. Advanced Plant Ecology. (4) I. In even years. Advanced study of vegetation change and of the relationships of plants and environment at various developmental stages. Eight hours combined rec. and lab a week. Pr.: BIOL 500 and BIOL 529 or 631. BIOL-865-1-0420

BIOL 868. Advanced Cellular and Developmental Biology. (3) II. Chemistry, structure, and function of cellular systems in growth, development, and reproduction. Pr.: BIOCH 522 or equiv. BIOL-868-0-0417

BIOL 870. Advanced Systematic Botany. (4) I. In odd years. Classification, nomenclature, and taxonomic theory of vascular plants. Two hours rec. and six hours lab a week. Pr.: BIOL 551. BIOL-870-1-0402

BIOL 880. Population Ecology. (3) II. Growth and regulation of populations, cycles, competition theory, seasonal effects, predator-prey, and community relationships, biogeography, and social regulation. Intensive consideration of current theoretical developments, and recent field population studies. Pr.: BIOL 631, a course in Calculus and a course in Statistics. BIOL-880-0-0420

BIOL 890. Advanced Topics in Biology. (1-6) I, II, S. Pr.: Consent of instructor. BIOL-890-3-0401

BIOL 891. Advanced Problems in Biology. (1-8) I, II, S. Pr.: Consent of instructor. BIOL-891-3-0401

BIOL 895. Graduate Seminar in Biology. (1) I, II. Pr.: Consent of instructor. BIOL-895-0-0401

BIOL 898. Master's Research in Biology. (1-9) I, II, S. BIOL-898-4-0401

BIOL 899. Master's Research in Microbiology. (1-9) I, II, S. BIOL-899-4-0411

BIOL 998. Research in Biology. (Var.) I, II, S. BIOL-998-4-0402

BIOL 999. Research in Microbiology. (Var.) I, II, S. BIOL-999-4-0411

Chemistry

Kenneth J. Klabunde, head of department

Professors Copeland,* Fateley,* Hammaker,* Hawley,* Kay,* Klabunde,* Kruh,* Lambert;* McDonald,* Meloan,* Moser,* Paukstelis,* Purcell,* and Setser;* Associate Professors Fry* and Sherwood; Assistant Professors Hua,* Lenhert, Maatta,* and Macomber;* Emeriti: Professors Lash and Schrenk; Associate Professors Johnson* and Lanning; Assistant Professor Harriss.

The Department of Chemistry occupies Willard Hall and the H.H. King Chemical Laboratory. The faculty of the department consists of 19 Ph.D. chemists representing a broad range of specialization in the chemistry field. The department offers programs leading to the B.S., B.A., M.S., and Ph.D. degrees and, in addition, instruction is provided in introductory and advanced chemistry to undergraduate and graduate students in numerous other curricula. Instruction and research in chemistry are conducted in laboratories well-equipped with modern facilities and instruments.

Undergraduate study

A significant number of graduates use their course of study as an effective preparation for further study in a life science such as medicine.

High school preparation. High school students who plan to major in chemistry should have a good background in mathematics and English composition. Trigonometry and two years of algebra are recommended, as are courses in chemistry and physics.

Transfer students. It is recommended that community college students take general chemistry, qualitative and quantitative analysis, one year of organic chemistry, analytic geometry, calculus, physics, and English composition prior to entering KSU.

Independent study and research

Many chemistry students at Kansas State University are engaged in independent study and research, some as early as the first year. One semester of research experience is required, under the supervision of a faculty member of the student's choice.

Dual degrees

Programs are available which lead to a dual degree in chemistry and another field such as chemical engineering, mechanical engineering, or agriculture. The degree requirements of both curricula must be met and a minimum of 150 credit hours completed. Graduates of such a program are highly sought by industry and are especially well suited for graduate study in either field of their dual degrees.

Secondary education certification

Students who desire to become high school chemistry teachers may prepare for teacher certification while completing requirements in either the chemistry or chemical science curriculum. A student pursuing this plan will have advisors in both chemistry and education. For specific certification requirements

in secondary education, please see the College of Education section of this catalog.

Graduate study

Programs leading to the M.S. and Ph.D. degrees are offered. Research and graduate level courses are conducted in the areas of analytical, inorganic, organic, and physical chemistry.

In order to be admitted to the graduate program leading to the M.S. or Ph.D. degree, a student must have completed undergraduate courses in chemistry, mathematics, and physics equivalent to those in the undergraduate chemistry curriculum. Prospective graduate students whose undergraduate training does not meet these requirements may be admitted on a provisional basis but, depending on placement exam results, may be required to take undergraduate courses, which may not be applied for graduate credit, to make up their deficiencies.

There are no formal foreign language requirements for advanced degrees in this department.

The Department of Chemistry requires all graduate students majoring in chemistry to teach at least one semester as part of their training for an advanced degree.

Information and a brochure describing fields of research, supporting facilities, financial support, and other aspects of graduate study may be obtained on request from the Chairman, Graduate Assistantship Committee, Department of Chemistry, Manhattan, Kansas 66506.

Chemistry curriculum for the B.S. degree*

The following is the preferred curriculum for those preparing for employment as chemists or those preparing for graduate study in chemistry.

120 credit hours required for graduation

Chemistry—40-42 hours

CHM 220	Chemical Principles I **and**	5
CHM 250	Chemical Principles II	5
	or	
CHM 210	Chemistry I **and**	4
CHM 230	Chemistry II **and**	4
CHM 271	Chemical Analysis	4
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry Laboratory	2
CHM 550	Organic Chemistry II	3
CHM 545	Chemical Separations	2
CHM 585	Physical Chemistry I	3
CHM 595	Physical Chemistry II	3
CHM 598	Physical Chemistry II Laboratory	2
CHM 697	Structure and Bonding	2
CHM 657	Inorganic Techniques	1
CHM 698	Inorganic Chemistry	3
CHM 666	Instrumental Analysis	3
CHM 667	Instrumental Analysis Laboratory	1
CHM 599	Undergraduate Research	2
	or	
CHM 551	Advanced Organic Laboratory (may be taken prior to the senior year)	2

Mathematics—12 hours

MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
MATH 222	Analytic Geometry & Calculus III	4

Physics—10 hours

PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5

*A program leading to the B.A. degree may be planned by modifying the social sciences and humanities requirements. See general college information for specific requirements for the B.A. degree.

Chemical science curriculum for the B.S. degree*

The following is the preferred curriculum for those intending to use their chemical training as a background for work or study in another area such as medicine, education, law, biology, agriculture.

120 credit hours required for graduation

Chemistry—27-30 hours

CHM 220	Chemical Principles I **and**	5
CHM 250	Chemical Principles II	5
	or	
CHM 210	Chemistry I **and**	4
CHM 230	Chemistry II **and**	4
CHM 271	Chemical Analysis	4
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry Laboratory	2
CHM 550	Organic Chemistry II	3
CHM 551	Advanced Organic Laboratory	2
CHM 545	Chemical Separations	2
CHM 500	General Physical Chemistry	3
	or	
CHM 585	Physical Chemistry I	3
	One additional course in chemistry or biochemistry	

Mathematics—8-14 hours

MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
	(Requirements for College Algebra and Plane Trigonometry waived for those with credit in Analytic Geometry & Calculus I.)	

Physics—8 hours

PHYS 113	General Physics I	4
PHYS 114	General Physics II	4

*A program leading to the B.A. degree may be planned by modifying the social sciences and humanities requirements. See general college section for specific requirements for the B.A. degree.

Introductory and general chemistry Undergraduate credit

CHM 100. Concepts in Chemistry. (1) I. A first course in chemistry for students without high school chemistry or students who wish to improve their background in chemistry before taking Chemistry I or General Chemistry. The mole concept, chemical stoichiometry, introduction to atomic structure. One hour lec. a week. Pr.: MATH 010 or equiv. CHM-100-0-1905

CHM 101. Chemical Science Colloquium. (2) I, II. Telenet only. Current topics in chemistry presented by a distinguished international authority and moderated by a KSU faculty member. Syllabus provided and final original paper required. May be repeated once. Not open to chemistry majors. CHM-101-0-1905

CHM 110. General Chemistry. (5) I, II. Principles, laws, and theories of chemistry; important metallic and non-metallic substances. Three hours lec., one hour rec. and three hours lab a week. CHM-110-1-8-1905

CHM 195. Approved Techniques in Criminalistics. (3) Intersession only. Physical evidence at a crime scene and its examination in the laboratory. Soils, glass, hair fibers, drugs, explosives, poisons, castings, inks, and arson and rape situations are investigated. CHM-195-1-0-1909

CHM 210. Chemistry I.* (4) I, II, S. First course of a two-semester study of the principles of chemistry and the properties of the elements and their compounds. Three hours lec. and three hours lab a week. Pr.: One year of high school chemistry (or CHM 100) and MATH 010 (or equiv.). CHM-210-1-7-1905

*In the fall semester, the chemistry department conducts an accelerated program which provides the opportunity for students with good preparation in high school chemistry to earn credit in both CHM 210, Chemistry I and CHM 230, Chemistry II. Credit in Chemistry I is earned through satisfactory performance on a review examination given the second week of the semester and completion of a special laboratory of three hours per week. Credit in Chemistry II is earned through a special lecture program. Guidelines for assignment to this program are available from the chemistry department.

CHM 220. Chemical Principles I. (5) I. First course of a two-semester study of chemical principles. For students in curricula with a major emphasis in chemistry. Three hours lec. and six hours lab a week. Pr.: High school chemistry (1 year) and algebra (1½ years). CHM-220-1-6-1905

CHM 230. Chemistry II. (4) I, II, S. Second course of a two-semester study of the principles of chemistry and the properties of the elements and their compounds. Three hours lec. and three hours lab a week. Pr.: CHM 210. CHM-230-1-7-1905

CHM 250. Chemical Principles II. (5) II. Continuation of CHM 220, covering the principles of chemistry. Laboratory stresses quantitative chemistry. Three hours lec. and six hours lab a week. Pr.: CHM 220. CHM-250-1-6-1905

CHM 399. Sophomore Honors Seminar. (3) I, II. Open to students in the Arts and Sciences Honors Program. CHM-399-0-4900

CHM 498. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the Arts and Sciences Honors Program. CHM-498-4-0401

CHM 499. Problems in Undergraduate Chemistry. (Var.) I, II, S. Problems may include classroom and/or lab work. Pr.: Consent of instructor. CHM-499-3-1905

Undergraduate and graduate credit in minor field

CHM 599. Undergraduate Research. (1, 2, 3) I, II, S. Analytical, inorganic, organic, or physical chemistry. CHM-599-4-1905

Undergraduate and graduate credit

CHM 600. Scientific Glassblowing. (1) I, II, S. The basic techniques of bending, sealing, and blowing glass used to fabricate scientific glassware. Three hours of laboratory including one lecture-demonstration per week. Pr.: Senior or graduate standing in physical sciences. CHM-600-1-2-1905

CHM 700. Practicum in Teaching Chemistry. (1) I. Principles and methods of instruction in laboratories and recitation classes in chemistry, including one semester of supervised experience as an instructor in a chemical laboratory. This is a required course of all teaching assistants in the Department of Chemistry. May be taken only once for credit. Pr.: Senior standing in chemistry. CHM-700-2-1905

CHM 799. Problems in Chemistry. (Var.) I, II, S. Problems may include classroom or laboratory work. Not for thesis research. Pr.: Consent of instructor. CHM-799-3-1905

Graduate credit

CHM 899. Research in Chemistry. (Var.) I, II, S. Research in analytical chemistry, inorganic chemistry, organic chemistry, and physical chemistry for the M.S. degree. CHM-899-4-1905

CHM 999. Research in Chemistry. (Var.) I, II, S. Research in analytical chemistry, inorganic chemistry, organic chemistry, and physical chemistry for the Ph.D. degree. CHM-999-4-1905

Analytical chemistry

Undergraduate credit

CHM 240. Environmental Chemistry Laboratory. (1) I, II. Selected experiments in air quality, water quality, and other environmental topics. Three hours lab a week. Pr.: CHM 230 or conc. enrollment. CHM-240-1-0-1909

CHM 271. Chemical Analysis. (4) I, II, S. Principles of chemical equilibria and qualitative, gravimetric, and titrimetric analyses. Two hours lec. and six hours lab a week. Pr. or conc.: CHM 230. CHM-271-1-5-1909

Undergraduate and graduate credit in minor field

CHM 545. Chemical Separations. (2) II. Principles of modern separation techniques. One hour lec. and three hours lab a week. Pr.: CHM 250 or CHM 271. CHM-545-1-5-1909

Undergraduate and graduate credit

CHM 666. Instrumental Analysis. (3) I. Three hours lec. a week. Pr.: CHM** CHM-666-0-1909

CHM 667. Instrumental Analysis Laboratory. (1) I. Three hours lab a week. CHM-667-1-0-1909

CHM 668. Chemical Equilibria. (1) I. One hour lec. a week. Pr.: CHM** CHM-668-0-1909

CHM 725. Instrumentation in Chemistry. (3) I, II. Theory and practice of instrument design for use in chemical research. Study of the flow of energy and information in systems for measurement and control. Two hours lec. and three hours lab a week. Pr.: CHM 666 or consent of instructor. CHM-725-1-1909

CHM 728. Chemistry of Analytical Reactions. (2) II. A study of the inorganic and organic reagents of importance in analytical chemistry and their reactions in sensitive and selective methods of analysis. Pr.: CHM 550, 697, 666 or equiv. courses. CHM-728-1-1909

Graduate credit

CHM 901. Graduate Seminar in Analytical Chemistry. (0-1) I, II, S. CHM-901-0-1909

**All chemistry courses numbered 600 or above require the following as minimum prerequisites: CHM 550, Organic Chemistry II, CHM 532, Organic Chemistry Laboratory, CHM 595, Physical Chemistry II, and CHM 598, Physical Chemistry II Laboratory.

CHM 921. Advanced Separations. (2) I, II. In even years. Two hours lec. a week. Pr.: CHM** CHM-921-0-1909

CHM 922. Advanced Separations Laboratory. (1) I, II. In even years. Three hours lab a week. CHM-922-1-0-1909

CHM 942. Advanced Analytical Chemistry. (3) I. In odd years. Elemental and functional group analyses, nonaqueous solvent systems, gas analysis, kinetics, and thermal methods of analysis. Pr.: CHM** CHM-942-0-1909

CHM 944. Electroanalytical Chemistry. (2-3) I. In even years. Theory and applications of electrochemical methods; chronoamperometry, chronopotentiometry, cyclic voltammetry, coulometry, polarography, potentiometry, and instrumentation. Pr.: CHM** CHM-944-1-1909

CHM 945. Selected Topics in Analytical Chemistry. (1-3) On sufficient demand. A lecture course in analytical chemistry in areas of specialization of the faculty, with emphasis on current developments. Specific topics will be changed from semester to semester, so a student may take the course for credit more than once. Pr.: CHM** CHM-945-0-1909

CHM 946. Principles and Techniques of Analytical Chemistry I. (1-5) II. In odd-numbered years. A lecture and laboratory course on emission spectroscopy, flame photometry, atomic absorption, and x-ray methods. Pr.: CHM** CHM-946-1-1909

CHM 947. Principles and Techniques of Analytical Chemistry II. (1-4) II. In even-numbered years. A lecture and laboratory course on ultraviolet and visible absorption, infrared and Raman methods, fluorescence, phosphorescence, polarimetry and refractometry. Pr.: CHM** CHM-947-1-1909

CHM 948. Computer Control of Chemical Instruments. (3). The technique and use of a mini-computer in the laboratory environment, including interface hardware and software for digital and analog data acquisition and display and instrument control. Two hours lec. and three hours lab a week. Pr.: CHM 725. CHM-948-1-1909

Inorganic chemistry
Undergraduate and graduate credit

CHM 657. Inorganic Techniques. (1) II. The preparation, characterization and study of transition metal, main group, and organometallic compounds of unusual interest, using techniques commonly encountered in industrial and academic research. Three hours lab a week. Pr.: CHM 585. CHM-657-1-0-1906

CHM 697. Structure and Bonding. (2) I, S. Atomic and molecular structure, bonding concepts used in the practice of inorganic chemistry. This material forms a foundation for higher level courses in inorganic chemistry. Pr.: CHM 550, 595. CHM-697-0-1906

CHM 698. Inorganic Chemistry. (3) II. Aspects of the structures, reactions, reaction mechanisms, and spectral properties of transition metal and non-metal compounds. Three hours lec. a week. Pr.: CHM 697. CHM-698-0-1906

**All chemistry courses numbered 600 or above require the following as minimum prerequisites: CHM 550, Organic Chemistry II, CHM 532, Organic Chemistry Laboratory, CHM 595, Physical Chemistry II, and CHM 598, Physical Chemistry II Laboratory.

CHM 710. Chemical Applications of Group Theory. (1) I. Applications of group theory to molecular structure, bonding, and spectra. One hour lec. a week. Pr.: CHM** CHM-710-0-1906

Graduate credit

CHM 902. Graduate Seminar in Inorganic Chemistry. (0-1) I, II, S. CHM-902-0-1906

CHM 929. Physical Methods in Inorganic Chemistry. (3) II. Theory and application of infrared, Raman, visible, ultraviolet, NMR, ESR, NQR, Mossbauer, and mass spectrometry to inorganic chemistry. Three hours lec. a week. Pr.: CHM 697, 710. CHM-929-0-1906

CHM 935. Selected Topics in Inorganic Chemistry. (1-3) I. A lecture course in inorganic chemistry in areas of specialization of the faculty, with emphasis on current developments. Specific topics will be changed from semester to semester, so a student may take the course for credit more than once. Pr.: Consent of instructor. CHM-935-0-1906

Organic chemistry
Undergraduate credit

CHM 190. Elementary Organic Chemistry. (3) I, II, S. A brief introduction to the principles of organic chemistry for students in certain agriculture and home economics curriculums. Conc. enrollment in CHM 191 is recommended. Three hours lec. a week. Pr.: CHM 110. CHM-190-0-1907

CHM 191. Elementary Organic Chemistry Laboratory. (2) I, II, S. Six hours lab a week. Pr. or conc.: CHM 190. CHM-191-1-1907

CHM 350. General Organic Chemistry. (3) I, II, S. A survey of types of organic reactions important to biological science areas including pre-veterinary and certain agriculture and home economics programs. Conc. enrollment in CHM 351 is urged. Three hours lec. a week. Pr.: CHM 230. CHM-350-0-1907

CHM 351. General Organic Chemistry Laboratory. (2) I, II, S. Six hours lab a week. Pr. or conc.: CHM 350. CHM-351-1-1907

Undergraduate and graduate credit in minor field

CHM 531. Organic Chemistry I. (3) I. General principles of organic chemistry; study of the main types of aliphatic compounds, with an introduction to fats, carbohydrates, amino acids, proteins, and aromatic compounds. Required for the chemistry curricula and for entrance to medical schools. Three hours lec. a week. Pr.: CHM 230 or 250. CHM-531-0-1907

CHM 532. Organic Chemistry Laboratory. (2) I. Six hours lab a week. Pr.: CHM 531. CHM-532-1-1907

CHM 550. Organic Chemistry II. (3) II. Continuation of CHM 531, including additional aromatic chemistry, condensation reactions, and introduction to some advanced topics, such as dyes, polymers, and heterocyclic chemistry. Three hours lec. a week. Pr.: CHM 531. CHM-550-0-1907

CHM 551. Advanced Organic Laboratory. (2) I, II. Six hours lab a week. Pr.: CHM 550 and CHM 532. CHM-551-1-1907

**All chemistry courses numbered 600 or above require the following as minimum prerequisites: CHM 550, Organic Chemistry II, CHM 532, Organic Chemistry Laboratory, CHM 595, Physical Chemistry II, and CHM 598, Physical Chemistry II Laboratory.

Graduate credit

CHM 852. Advanced Organic Chemistry. (3) I. Advanced study of organic compounds and fundamental types of reactions. Three hours lec. a week. Pr.: CHM** CHM-852-0-1907

CHM 860. Synthetic Organic Chemistry. (4) II. Conditions, scope, and applications of reactions useful in synthetic organic chemistry. Four hours lec. a week. Pr.: CHM** CHM-860-0-1907

CHM 862. Organic Spectroscopy. (3) II. The principles of IR, UV-VIS, mass, and NMR spectroscopies applied to the problem of structure determination. Three hours lec. a week. Pr.: CHM** CHM-862-0-1907

CHM 903. Graduate Seminar in Organic Chemistry. (0-1) I, II. CHM-903-0-1907

CHM 965. Physical Organic Chemistry I. (3) I. Principles of orbital symmetry, thermochemistry, kinetics, and other topics applied to the understanding of reaction mechanisms. Three hours lec. a week. Pr.: CHM** CHM-965-0-1907

CHM 967. Physical Organic Chemistry II. (3) II. The principal types of intermediates and mechanisms of organic reactions and the various types of evidence for them. Recent developments are followed in the current literature. Three hours lec. a week. Pr.: CHM 965. CHM-967-0-1907

CHM 970. Selected Topics in Organic Chemistry. (1-3) On sufficient demand. A lecture course in organic chemistry in areas of specialization of the faculty, with emphasis on current developments. Specific topics will be changed from semester to semester, so a student may take the course for credit more than once. Pr.: CHM** CHM-970-0-1907

Physical chemistry

Undergraduate and graduate credit in minor field

CHM 500. General Physical Chemistry. (3) II. Elementary principles of physical chemistry. Three hours lec. a week. Pr.: CHM 230 or CHM 250 and MATH 210 or MATH 220. CHM-500-0-1908

CHM 585. Physical Chemistry I. (3) I, S. Elementary chemical thermodynamics and kinetic theory of gases. Three hours lec. a week. Pr.: CHM 230 or CHM 250, MATH 222, PHYS 214. CHM-585-0-1908

CHM 586. Physical Chemistry I Laboratory. (2) I. Six hours lab a week. Pr.: CHM 250 or CHM 271, CHM 585 or conc. enrollment. CHM-586-1-1908

CHM 595. Physical Chemistry II. (3) II, S. Elementary quantum chemistry, spectroscopy, statistical thermodynamics, and chemical kinetics. Three hours lec. a week. Pr.: CHM 585. CHM-595-0-1908

CHM 598. Physical Chemistry II Laboratory. (2) II. Six hours lab a week. Pr.: CHM 250 or CHM 271 and CHM 595 or conc. enrollment. CHM-598-1-1908

**All chemistry courses numbered 600 or above require the following as minimum prerequisites: CHM 550, Organic Chemistry II, CHM 532, Organic Chemistry Laboratory, CHM 595, Physical Chemistry II, and CHM 598, Physical Chemistry II Laboratory.

Graduate credit

CHM 801. Chemical Thermodynamics. (3) II. In alternate years. The laws, principles, and methods of thermodynamics and their applications to chemical systems. Statistical-molecular approach emphasized. Three hours lec. a week. Pr.: CHM** CHM-801-0-1908

CHM 854. Theoretical Chemistry I. (3) I. Introduction to quantum mechanics and atomic and molecular spectroscopy. Three hours lec. a week. Pr.: CHM** CHM-854-0-1908

CHM 856. Chemical Kinetics. (3) I. In alternate years. Survey of experimental and/or theoretical aspects of dynamics of chemical reactions. Three hours lec. a week. Pr.: CHM 801 or CHM 854. CHM-856-0-1908

CHM 904. Graduate Seminar in Physical Chemistry. (0-1) I, II, S. Presentation of topics from literature in physical chemistry. CHM-904-0-1908

CHM 950. Chemical Statistical Methods. (3) I. In alternate years. Application of classical and quantum statistical mechanics to chemical phenomena. Three hours lec. a week. Pr.: CHM 801, 854. CHM-950-0-1908

CHM 954. Theoretical Chemistry II. (3) II. Quantum theory of atomic and molecular structure. Three hours lec. a week. Pr.: CHM 854. CHM-954-0-1908

CHM 955. Selected Topics in Physical Chemistry. (1-3) On sufficient demand. A lecture course in physical chemistry in areas of specialization of the faculty, with emphasis on current developments. Specific topics will be changed from semester to semester, so a student may take the course for credit more than once. Pr.: CHM 854. CHM-955-0-1908

Computer Science

Virgil E. Wallentine, head of department

Professors Fisher,* Hankley,* Unger,* and Wallentine;* Associate Professors Calhoun,* Conrow,* Gallagher,* and VanSwaay; Assistant Professors Bates,* Gustafson,* Hartley,* McBride,* Miller, and Terry; Instructor Basham.

Undergraduate study

The creation and utilization of the best possible hardware and software is, broadly speaking, the field of computer science.

Two curricula, computer science and information systems, are offered by the Department of Computer Science. Many other fields increasingly require a minor emphasis in computer science, and students working toward a dual degree (one in computer science and one in some other field) are increasingly common.

The department maintains laboratories with several mini- and micro-computers. Large computer facilities are provided by the KSU Computing Center. Some students choose to own or share micro-computers because of the convenience and learning efficiency of personal interactive computing.

Computer science curriculum

The computer science curriculum emphasizes a broad foundation of computer organization and software and mathematics, together with electives which focus on some aspect or application of computers.

A person seeking a bachelor of science or bachelor of arts degree in computer science must fulfill the general requirements of the College of Arts and Sciences and the following:

MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
MATH 551	Applied Matrix Theory	3
STAT 410	Statistics for Computer Science	3
EE 241	Introduction to Computer Engineering	3
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 207	PASCAL Language Laboratory	2
CMPSC 300	Algorithmic Processes	3
CMPSC 305	Computer Organization & Programming IA	3
	or	
CMPSC 307	Computer Organization & Programming IB	3
CMPSC 340	Software Engineering Project I	2
CMPSC 341	Software Engineering Project II	2
CMPSC 370	Theoretical Foundations of Computer Science	3
CMPSC 405	Introduction to Programming Languages	3
CMPSC 420	Operating Systems I	3
CMPSC 460	Data Structures	3
CMPSC 561	Introduction to Data Management Systems	3
CMPSC 580	Numerical Computing	3
	Technical electives (with advisor's approval)	15

Information systems curriculum

The information systems curriculum emphasizes the use of computers to solve problems involving accounting, business processes, information storage and retrieval, and management. A person seeking a bachelor of science or bachelor of arts degree in information systems must fulfill the general requirements of the College of Arts and Sciences and the following:

STAT 320	Elements of Statistics	3
EE 241	Introduction to Computer Engineering	3
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 207	PASCAL Language Laboratory	2
CMPSC 300	Algorithmic Processes	3
CMPSC 305	Computer Organization & Programming IA	3
	or	
CMPSC 307	Computer Organization & Programming IB	3
CMPSC 340	Software Engineering Project I	2
CMPSC 341	Software Engineering Project II	2
CMPSC 362	Introduction to Business Programming	3
CMPSC 370	Theoretical Foundations of Computer Science	3
CMPSC 405	Introduction to Programming Languages	3
CMPSC 420	Operating Systems I	3
CMPSC 460	Data Structures	3
CMPSC 561	Introduction to Data Management Systems	3
CMPSC 562	Business Data Processing	3
CMPSC 567	Systems Analysis for Business	3
	Technical electives (with advisor's approval)	15

Required courses may not be taken under the A/Pass/F option.

Graduate study

The Department of Computer Science offers graduate studies leading to master of science and doctor of philosophy degrees. A minimum of 30 semester hours of graduate course work is required for the master's degree, including: CMPSC 897, Seminar in Computer Science, and CMPSC 670, Discrete Computational Structures, and one course with a prerequisite at the 600 level or above. Either a scholarly and creative work such as a software system or publishable paper (CMPSC 899), a research thesis (CMPSC 899), or a directed project and report (CMPSC 898) is required, as well as satisfactory performance on a master's examination. The master's examination covers areas of compiler systems (CMPSC 700), operating systems (CMPSC 720), software engineering (CMPSC 740), and data base systems (CMPSC 761).

The Doctor of Philosophy in Computer Science is offered jointly by Kansas State University and the University of Kansas. Students apply to one of the schools, but are formally admitted to both universities. Students working at KSU may take some courses at KU and are required to have a representative of KU as a member of their supervisory committee.

Admission to candidacy for the doctoral degree requires completion of the master's examination at a level specified for Ph.D. candidacy; selection of a research supervisory committee; completion of written preliminary examinations in three areas supportive of the student's proposed research area; and presentation of a proposal for Ph.D. research. Normally, each of the three examination areas should be supported by at least two graduate-level courses in the subject area. Completion of the doctoral degree requires 24 semester hours of course work beyond the master's degree at KSU or KU (which must include four computer science courses at the 900 level), a minimum of 30 hours of research, and presentation and defense of the dissertation. Courses at the 900 level are ofered on a two-year rotation schedule.

Central areas of research emphasis at KSU include: programming languages and language processors; data management systems; operating systems; software engineering; artificial intelligence; and computer architecture.

Areas of current research include: minicomputer networks; business and data base systems using minicomputers; computer graphics; systems simulation and modeling; programming languages; distributed systems; information retrieval; and knowledge-based systems.

Suggested course schedule for computer science majors

Freshmen year

Fall semester		**Sem. hrs.**
ENGL 100	English Composition I	3
SPCH 105	Oral Communication I	2
MATH 220	Analytic Geometry & Calculus I	4
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 207	PASCAL Language Laboratory	2
PE 101	Concepts in Physical Education	1
		14

Spring semester		
ENGL 120	English Composition II	3
CMPSC 370	Theoretical Foundations of Computer Science	3
CMPSC 300	Algorithmic Processes	3
MATH 221	Analytic Geometry & Calculus II	4
	Social science elective (first of four)	3
		16

Sophomore year

Fall semester		
EE 241	Introduction to Computer Engineering	3
CMPSC 340	Software Engineering Project I	2
	Natural science elective with laboratory (first of four)	4-5
	Humanities elective (first of four)	3
	Social science elective (second of four)	3
		15-16

Spring semester

CMPSC 305	Computer Organization & Programming 1A	3
	or	
CMPSC 307	Computer Organization & Programming 1B	3
CMPSC 341	Software Engineering Project II	3
	Humanities elective (second of four)	3
	Technical elective (first of five)	3
	Natural science elective with laboratory (second of four)	4-5
		16-17

Junior year

Fall semester

CMPSC 420	Operating Systems I	3
CMPSC 20-	Second programming language laboratory	2
MATH 551	Applied Matrix Theory	3
	Technical elective (second of five)	3
	Natural science elective (third of four)	3
	Elective	2
		16

Spring semester

CMPSC 405	Introduction to Programming Languages	3
CMPSC 460	Data Structures	3
STAT 410	Statistics for Computer Science	3
	Technical elective (third of five)	3
	Social science elective (third of four)	3
		15

Senior year

Fall semester

CMPSC 561	Introduction to Data Management Systems	3
CMPSC 580	Numerical Computing	3
	Technical elective (fourth of five)	3
	Natural science elective (fourth of four)	3
	Elective	3
		15

Spring semester

CMPSC 20-	Third programming language laboratory	2
	Humanities elective (third of four)	3
	Humanities elective (fourth of four)	2
	Social science elective (fourth of four)	3
	Technical elective (fifth of five)	3
	Elective	3
		15

Suggested course schedule for information systems majors

Freshmen year

Fall semester		Sem. hrs.
ENGL 100	English Composition I	3
SPCH 105	Oral Communication I	2
MATH 100	College Algebra (prerequisite for STAT 320)	3
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 207	PASCAL Language Laboratory	2
	Elective	2-3
		14-15

Spring semester

ENGL 120	English Composition II	3
CMPSC 370	Theoretical Foundations of Computer Science	3
CMPSC 300	Algorithmic Processes	3
PE 101	Concepts in Physical Education	1
	Humanities elective (first of four)	3
	Social science elective (first of four)	3
		16

Sophomore year

Fall semester

EE 241	Introduction to Computer Engineering	3
CMPSC 340	Software Engineering Project I	2
CMPSC 362	Introduction to Business Programming	3
	Social science elective (second of four)	3
	Natural science elective with laboratory (first of four)	4-5
		15-16

Spring semester

CMPSC 305	Computer Organization & Programming 1A	3
	or	
CMPSC 307	Computer Organization & Programming 1B	3
CMPSC 341	Software Engineering Project II	3
	Humanities elective (second of four)	3
	Natural science elective with laboratory (second of four)	4-5
	Technical elective (first of four)	3
		16-17

Junior year

Fall semester

CMPSC 420	Operating Systems I	3
CMPSC 562	Business Data Processing	3
	Technical elective (second of five)	3
	Natural science elective (third of four)	3
	Elective	3
		15

Spring semester

CMPSC 405	Introduction to Programming Languages	3
CMPSC 460	Data Structures	3
STAT 320	Elements of Statistics	3
	Humanities elective (third of four)	2
	Technical elective (third of five)	3
	Elective	2
		16

Senior year

Fall semester

CMPSC 561	Introduction to Data Management Systems	3
CMPSC 567	Systems Analysis for Business	3
	Social science elective (third of four)	3
	Natural science elective (fourth of four)	3
	Technical elective (fourth of five)	3
		15

Spring semester

	Humanities elective (fourth of five)	3
	Social science elective (fourth of four)	3
	Technical elective (fifth of five)	3
	Electives	6
		15

Courses in computer science

Undergraduate credit

CMPSC 100. Computing Appreciation. (3) I, II. Introduction to the use of computers including programming, problem-solving capabilities, current applications, and impact of this technology on individuals and society. CMPSC-100-0-0701

CMPSC 200. Fundamentals of Computer Programming. (2) I, II, S. History of computers, description of digital computing systems, strategy of problem solving using digital computers, concepts and properties of algorithms, introduction to procedure-oriented languages, relevance of computers to society. This course plus one of the succeeding languages laboratories constitute a single course. Pr.: College Algebra, plus conc. enrollment in one C.S. Language Lab. CMPSC-200-0-0704

CMPSC 201. FORTRAN Language Laboratory. (2) I, II, S. Fundamentals of programming in FORTRAN; applications. Six hours lab a week. Pr. or conc.: CMPSC 200. CMPSC-201-1-0-0704

CMPSC 202. PL/1 Language Laboratory. (2) I, II, S. Fundamentals of programming in PL/1; applications. Six hours lab a week. Pr. or conc.: CMPSC 200. CMPSC-202-1-0-0704

CMPSC 206. BASIC Language Laboratory. (2) I, II. Fundamentals of programming in BASIC; applications. Six hours lab a week. Pr. or conc.: CMPSC 200. CMPSC-206-1-0-0704

CMPSC 207. PASCAL Language Laboratory. (2) I, II, S. Fundamentals of programming in PASCAL; applications. Six hours lab a week. Pr. or conc.: CMPSC 200. CMPSC-207-1-0-0704

CMPSC 211. FORTRAN Laboratory for Engineering Majors. (1) I, II. Fundamentals of programming engineering applications in FORTRAN. Pr. or conc.: CMPSC 200. CMPSC-211-1-0-0704

CMPSC 300. Algorithmic Processes. (3) I, II, S. Structured design and coding; arrays, records, sets, pointers, files, strings; defined types, stacks, queues; searching, hashing, sorting; recursion; procedure specifications, testing, debugging. Pr.: Knowledge of PASCAL language. CMPSC-300-1-0-0704

CMPSC 305. Computer Organization and Programming IA. (3) I, II, S. Introduction to assembly languages, logical computer organization using register transfer languages, instruction sequencing, addressing systems, and subroutine linkages and command languages for "small" computers. Pr.: EE 241. CMPSC-305-0-0704

CMPSC 306. Operating Systems Laboratory. (3) II. Advanced programming laboratory for experience in O/S 360/370, job control language, utilities, and access methods. Pr.: CMPSC 305 or 307. CMPSC-306-0-0704

CMPSC 307. Computer Organization and Programming IB. (3) I, II. Introduction to assembly languages, logical computer organization using register transfer languages, instruction sequencing, addressing systems, and subroutine linkages and command languages for "large" computers. Pr.: EE 241. CMPSC-307-0-0704

CMPSC 340. Software Engineering Project I. (2) I. Software development methodologies, group project organizational schemes and software requirements. Specificational approaches; design of a software system. Pr.: CMPSC 300. CMPSC-340-0-0701

CMPSC 341. Software Engineering Project II. (2) II. Coding, integration and testing of a software system as a group project. Pr.: CMPSC 340 which must be taken in the preceding semester. CMPSC-341-1-0-0704

CMPSC 362. Introduction to Business Programming. (3) I, II, S. An introduction to basic business programming techniques including file manipulation operations and sorting. The COBOL language will be used as an implementation tool. Pr.: One CMPSC Language Lab. CMPSC-362-1-6-0723

CMPSC 370. Theoretical Foundations of Computer Science. (3) I, II. An examination of the fundamental structures and concepts of Computer Science. Includes an introduction to automata, relations, computability, and formal languages. Pr.: CMPSC 207. CMPSC-370-0-0702

CMPSC 397. Honors Seminar in Computer Science. (1-3). CMPSC-397-3-0701

CMPSC 405. Introduction to Programming Languages. (3) I, II. Structure of algorithmic, conversational, list processing, and string manipulation languages; concepts and facilities of programming languages; structure of compilers; introduction to formal languages and parsing. Pr.: CMPSC 300 and 370. CMPSC-405-0-0701

CMPSC 420. Operating Systems I. (3) I, II. Basic systems concepts: assemblers, linking loaders, batch monitors, interrupt systems, input/output systems, and files; procedure implementation; process parallelism and synchronization; memory and name management. Pr.: CMPSC 305 or 307. CMPSC-420-0-0701

CMPSC 460. Data Structures. (3) I, II. Data encapsulation; lists, trees, and general linked structures; representation of structures within a computer; memory management; specification and validation of packages. Pr.: CMPSC 300 and 370. CMPSC-460-0-0701

CMPSC 490. Special Topics in Computer Science. (2-4). Current topics in computer science. Pr.: Prerequisite varies with the announced topic. CMPSC-490-0-0701

CMPSC 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the Arts and Sciences honors program. CMPSC-499-0-0701

Undergraduate and graduate credit in minor field

CMPSC 561. Introduction to Data Management Systems. (3) I, II. Evolution of information storage and retrieval technology, generalized structured and unstructured systems including decision support systems; contemporary data base management systems (DBMS). Pr.: CMPSC 460. CMPSC-561-0-0701

CMPSC 562. Business Data Processing. (3) I, II. Advanced topics in COBOL with application to typical business data processing systems such as payrolls, file systems, inventories, and management information systems. Pr.: CMPSC 362. CMPSC-562-0-0703

CMPSC 565. Computer Installation Management. (3) I. Computer selection, personnel organization and management, budget, optimizing system operation, PERT. Students plan, recommend, and defend small data processing systems. Pr.: CMPSC 300. CMPSC-565-0-0703

CMPSC 567. Systems Analysis for Business. (3) I. Manual, semiautomatic and automatic data processing systems; accounting concepts, data processing implications; organization of sequential and direct-access files; checking and control techniques. Students will study business applications and recommend data-processing systems. Pr.: CMPSC 460. CMPSC-567-0-0703

CMPSC 580. Numerical Computing. (3) I, II. Introduction to numerical algorithms fundamental to scientific computer work, including elementary discussion of error, roots of equations, interpolation, systems of equations, quadrature, and introduction to methods for solution of ordinary differential equations. Pr.: CMPSC 300 and MATH 221 and 551. CMPSC-580-0-0701

CMPSC 591. Computer Science Applications. (3) I, II, S. Programming, JCL, program libraries and design of algorithms. For students with minimal background in Computer Science. Not for credit by CMPSC majors. Pr.: Graduate standing in student's own area. CMPSC-591-0-0704

Undergraduate and graduate credit

CMPSC 600. Microcomputer Software. (3) II. Software systems for microcomputers, including languages such as structured BASIC. PASCAL, and FORTH; operating systems; graphics; applications; porting and evaluation of software; student projects. Pr.: CMPSC 300. Student must have access to a microcomputer approved by the instructor. CMPSC-600-0-0701

CMPSC 630. Techniques of Conceptual Modelling. (3) I. Investigation of the use of programming languages (with emphasis on LISP) for modelling concepts selected from artificial intelligence, information systems, advanced programming features and program environments. Pr.: CMPSC 460. CMPSC-630-0-0701

CMPSC 642. Human Factors in Software. (3). User interface to software systems; robust software, interaction and response devices, interactive systems; graphics; screen-oriented display, control, and data input; friendly systems; software project. Pr.: CMPSC 300. CMPSC-642-0-0701

CMPSC 671. Programming Science. (3) I, S. Use of formal logic for specification and verification of languages and programs; using ADA; abstractions and assertions for data structures, procedures, packages, loops, and tasks. Pr.: CMPSC 405, 420, and 460. CMPSC-671-0-0702

CMPSC 690. Implementation Projects. (3) I, II, S. The department will suggest various design or implementation projects for individuals or groups in areas such as translators, interpreters, microprogramming, minicomputer operating systems, graphics, numerical software, etc. Pr.: Junior standing. CMPSC-690-3-0799

CMPSC 697. Seminar in Computer Science. (1-3). Pr.: Junior standing. CMPSC-697-3-0701

CMPSC 700. Translator Design I. (3) II, S. Syntax representation, compilers and interpreters for PASCAL-like languages, lexical analysis, LL and recursive descent parsing, semantic analysis, code generation for stack machines, simple optimizations. Pr.: CMPSC 405 and 460. CMPSC-700-1-0-0701

CMPSC 705. Programming Languages II. (3) I. Advanced concepts and facilities of programming languages; compilation/interpretation structures to handle advanced programming features; programming and language facilities in special-purpose software and application packages; topics in formal models of language. Pr.: CMPSC 405. CMPSC-705-0-0701

CMPSC 710. Computer Simulation Experiments. (3) II. Principles of digital computer simulations; discrete and continuous simulation method, statistics of simulations; implementations. Pr.: CMPSC 300. CMPSC-710-0-0701

CMPSC 720. Operating Systems II. (3) I, II, S. Design of operating systems, concurrent programs, scheduling, memory management, protection, file systems, methods and languages for operating system development. Pr.: CMPSC 420 and 460. CMPSC-720-0-0701

CMPSC 725. Computer Networks. (3) II. Models of distributed computer systems; layering of protocols for networks, interprocess communication, study of current networks, network operating system protocol, experience on a state-of-the-art network. Pr.: CMPSC 720. CMPSC-725-0-0701

CMPSC 730. Artificial Intelligence. (3) II. Application of heuristics to problem solving; perceptions and pattern recognition; learning and self-evolving programs. Pr.: CMPSC 460. CMPSC-730-0-0701

CMPSC 736. Computer Graphics. (3) I. Computer representation and display of line drawings and gray-tone images; man-machine interaction; graphics language; transformations, clipping, hidden line removal; designing of image processing software. Pr.: CMPSC 460. CMPSC-736-0-0702

CMPSC 740. Software Engineering. (3) I. Software life cycle, requirements engineering, functional specifications, software design, abstract specifications, program proving, program validation, software metrics. Pr.: CMPSC 341. CMPSC-740-0-0701

CMPSC 745. Software Development Management. (3) II. Development models, cost estimation, management of programmer teams, acceptance criteria, reliability estimation, development standards. Pr.: CMPSC 341. CMPSC-745-0-0701

CMPSC 750. Advanced Computer Architecture Experiments. (3). Characteristics of various computers including those with execution support of multi-processing, multi-programming, micro-programmable, high-level language, stack processing, and communication architectures. Two hours lec. and three hours lab a week. Pr.: CMPSC 305 or 307 and EE 641. CMPSC-750-0-0701

CMPSC 755. Advanced Computer Architecture. (3) II. Critique of von Neumann architecture, the semantic gap, requisites for improved architectures. Language-directed, high-level-language, multiple-language-directed, and software-reliability-directed architectures. Pr.: EE 649 and CMPSC 420 and 720. CMPSC-755-0-0701

CMPSC 761. Data Base Management Systems. (3) I, II. Data models and languages, heirarchical, network, relational systems; implementation and operational requirements; programming projects using data base management systems. Pr.: CMPSC 561. CMPSC-761-0-0702

CMPSC 780. Numerical Solution of Ordinary Differential Equations. (2). Computer algorithms and techniques for solving ordinary differential equations; programming exercises on the digital computer. Pr.: One CMPSC Language Lab and MATH 555 or CMPSC 580 and MATH 240 plus conc. enrollment in MATH 780. CMPSC-780-0-0701

CMPSC 785. Numerical Solution of Partial Differential Equations. (2). Computer algorithms and techniques for solving partial differential equations; programming exercises on the digital computer. Pr.: CMPSC 780 and MATH 780 plus conc. enrollment in MATH 785. CMPSC-785-0-0701

CMPSC 791. Intensive Computer Science: Concepts. (1-3) I, II, S. Principles of data structure, assembly language programming, structure of operating systems and programming languages. Intended for entering graduate students in computer science. Pr.: CMPSC 300. CMPSC-791-0-0704

CMPSC 798. Topics in Computer Science. (Var.) I, II, S. Pr.: Prerequisite varies with the announced topic. CMPSC-798-3-0701

Graduate credit

CMPSC 801. Translator Design II. (3) I. LR parsing, storage allocation, code generation, data flow optimization, compiler generators. Pr.: CMPSC 700. CMPSC-801-0-0701

CMPSC 806. Semantics of Programming Languages. (3) In alternate years. User view of semantic models, comparative analysis of programming language features; implementation models; comparison of control languages. Pr.: CMPSC 740 and CMPSC 700. CMPSC-806-0-0701

CMPSC 820. Introduction to Operating Systems Theory. (3) I. Theoretical treatment of process synchronization, multiprocessors, resource allocation, scheduling theory, evaluation techniques for hierarchial memory and machines. Pr.: CMPSC 720. CMPSC-820-0-0705

CMPSC 830. Current Topics in Artificial Intelligence. (3) I. Advanced techniques and new ideas in artificial intelligence. Includes applications and case studies of artificial intelligence in action. Pr.: CMPSC 730. CMPSC-830-0-0701

CMPSC 840. Advanced Concepts in Software Engineering. (3) II. System requirements definition, design and verification, definition and implementation tools, software physics. Pr.: CMPSC 740. CMPSC-840-0-0704

CMPSC 860. Distributed Databases. (3) I. Investigation of topics such as backend machines, redundancy, security, concurrency control, recovery, performance models, data distribution models, managerial considerations, and implementation issues. Pr.: CMPSC 760. CMPSC-860-0-0702

CMPSC 870. Automata and Computability. (3). Elements of abstract algebra; review of finite automata; recursive functions and programmed machines; computable functions, loop programs and primitive recursive functions, theses of Turing and Church. Pr.: CMPSC 700. CMPSC-870-0-0701

CMPSC 890. Special Topics in Computer Science. (2-4). Topics of the current state-of-the-art of computer science. Pr.: Prerequisite varies with the announced topic. CMPSC-890-0-0701

CMPSC 897. Seminar in Computer Science. (1-3) I, II, S. Required for graduate students in computer science. Pr.: Full graduate standing in CMPSC. CMPSC-897-3-0701

CMPSC 898. Master's Report in CMPSC. (1-2) I, II, S. Pr.: CMPSC 897. CMPSC-898-3-0701

CMPSC 899. Research in Computer Science. (1-6) I, II, S. Pr.: CMPSC 897. CMPSC-899-4-0701

CMPSC 901. Topics in Translator Design. (3) On sufficient demand, in alternate years. Topics involving incremental, extensible, conversational compilers; program development systems, portability and validation of compilers; compiler generators. Pr.: CMPSC 700. CMPSC-901-0-0701

CMPSC 905. Theory of Programming Languages. (3) In alternate years. Formal definition languages; operational and formal semantic models; equivalence of semantic models; formal properties of programming languages. Pr.: (CMPSC 740 or CMPSC 670) and CMPSC 806. CMPSC-905-0-0701

CMPSC 920. Contemporary Concepts in Programming Systems. (3). Theoretical analysis of deadlock in multiprocess systems, detection and prevention; theoretical properties of virtual memory, the working set model; theory of resource allocation, scheduling theory. Pr.: CMPSC 720 and 806 and STAT 510. CMPSC-920-0-0701

CMPSC 926. Computation Structures. (3) In alternate years. Petri nets, flowgraph schemata, dataflow models; relationships between abstract computational models and hardware models and programming languages. Pr.: CMPSC 670 and CMPSC 750 and CMPSC 820. CMPSC-926-0-0701

CMPSC 931. Image Processing. (3) In alternate years. Research topics in generation, processing and retrieval of graphic and image information; standards for graphic software. Pr.: CMPSC 736. CMPSC-931-0-0701

CMPSC 940. Theory of Software Engineering. (3) In alternate years. Models of software; error models; theory of verification and validation; language structure for reliable software. Pr.: CMPSC 840. CMPSC-940-0-0701

CMPSC 960. Theory of Data Base Systems. (3) In alternate years. Advanced topics in data base systems including distributed data bases, integrity, security, normalization, data base machines performance models, query languages. Pr.: CMPSC 761. CMPSC-960-0-0702

CMPSC 990. Research Topics. (2-3). Study of current topics in computer science. Pr.: Consent of instructor. CMPSC-990-0-0701

CMPSC 999. Research in Computer Science. (Var.) I, II, S. Pr.: CMPSC 897. CMPSC-999-4-0701

Economics

Milton L. Manuel,* head of department

Professors Chalmers,* Emerson,* Manuel,* Nafziger,* and Thomas;* Associate Professors Akkina,* Babcock,* Gormely,* Oldfather, and Ragan;* Assistant Professors Chang, Greene, Koch, Olson,* Rhodes,* and Tremblay; Instructors Higham and Trenary; Emeriti: Professors Bagley* and Nordin;* Associate Professor Decou;* Instructor Bradley.

Economics is concerned with the principles governing the production and distribution of goods and services, the principles guiding the best use of resources—land, labor, and capital—and factors causing business prosperity and depression, economic growth, inflation, and deflation. Students may pursue specialized study in the fields of economic theory, history of economic thought, money and banking, public finance, labor relations, international trade, economic development, business fluctuations, transportation, econometrics, regional economics, and economic systems.

A student majoring in economics may be enrolled for either the bachelor of arts or the bachelor of science degree.

Students who transfer two years of work to Kansas State University from a community college and who plan to major in economics should have completed ECON 110, Economics I, and ECON 120, Economics II, or equivalent courses, and MATH 100, College Algebra.

Undergraduate study

Requirements for an economics major for either the B.A. or B.S. degree are:

ECON 110	Economics I	3
ECON 120	Economics II	3
ECON 510	Intermediate Macroeconomics	3
ECON 520	Intermediate Microeconomics	3

Five additional economics department courses, 500 level or above, in at least four branches of economics (except ECON 112, 505, and 506).

Any introductory statistics course: STAT 320, 340, 350, 702, 703

Mathematics: either MATH 205, General Calculus and Linear Algebra, or MATH 220, Analytic Geometry and Calculus I.

Courses taken credit-no credit may not be used to fulfill these requirements.

Secondary education certification. A student majoring in economics may also prepare for teacher certification at the secondary level. This program leads to the bachelor of science degree. The sequence of courses should be planned in cooperation with the student's advisors in both economics and education so that the requirements of secondary education are met.

Industrial relations and manpower studies. Students planning to work in the industrial relations or manpower development utilization field should become acquainted with the economic, political, and social aspects of labor-management relations and manpower studies by taking the following courses as part of either a terminal university program or a foundation for graduate study:

ECON 620	Labor Economics	3
ECON 627	Contemporary Labor Problems	3
SOCIO 746	The Sociology of Formal Organizations	3
SOCIO 747	Sociology of Work	3
POLSC 608	Public Personnel Administration	3
MANGT 530	Industrial & Labor Relations	3
MANGT 531	Personnel & Wage Administration	3
MANGT 630	Labor Relations Law	3
MANGT 631	Collective Bargaining	3
MANGT 632	Industrial Dispute Settlement	3

Accelerated undergraduate and graduate programs

A student who begins graduate work after completing the B.A. or B.S. degree generally requires more than one year to complete work for a master's degree. However, a five-year program leading to a B.A. or B.S. in economics or to a B.S. in agricultural economics at the end of four years and a Master of Arts in Economics or a Master of Science in Agricultural Economics at the end of five years is available for promising undergraduate students. Students who have completed the sophomore year and have outstanding scholastic records (GPA 3.2 or higher) are invited to join the program. Each student, in consultation with a faculty advisor, will plan an individualized program of study which meets requirements for the B.A., M.A., B.S., and M.S. degrees. Features of the program include integrated planning, participation in research as an undergraduate, and enrollment in graduate-level courses in the senior year. Students participating in the program will be considered for financial assistance in the form of scholarships, fellowships, research assistantships, and part-time work.

Graduate study

Graduate study leading to the degrees master of arts and doctor of philosophy is offered in economics. Fields of study are economic theory, history of economic thought, econometrics, regional economics, labor economics, monetary and fiscal policy, economic development, international trade, welfare economics, economic fluctuations, public finance, and transportation.

Graduate degrees are essential for careers as professional economists in higher education, business, or government. Graduate study also is valuable training for certain executive and research positions in business and government and for teaching social science in secondary schools.

Prerequisite to major graduate study in economics is completion of an undergraduate curriculum equivalent to that required of undergraduate majors in economics at Kansas State University. Students must demonstrate reasonable proficiency in mathematics and statistics.

Research facilities available to graduate students include modern electronic computers.

Opportunities for advanced study are enhanced by close contacts with the agricultural economics section of the department, with the College of Business Administration, with the agricultural and engineering experiment stations, and with the various state agencies.

Courses in economics

Undergraduate credit

ECON 110. Economics I. (3) I, II, S. Basic facts, principles and problems of economics; introductory principles of resource allocation; determination of the level of employment, output, price level; the monetary and banking system; institutions of the American economy; problems of labor, economic instability, depressions, inflation, economic growth; principles of economic development; other economic systems. ECON-110-0-2204

ECON 111. Economics I Honors. (3) I. Course description same as ECON 110. (3) I, II, S. Pr.: Open to students in Honors Program. ECON-111-0-2204

ECON 112. Economics Seminar for Education Majors. (1) I, II. For elementary and secondary education majors for the purpose of relating economic concepts and theory of ECON 110 to the teaching areas of the education student. If not taken concurrently with ECON 110, instructor's permission required. ECON-112-0-2204

ECON 120. Economics II. (3) I, II, S. Continuation of Economics I. Basic facts, principles, and problems of economics including study of the determination of prices by supply and demand, the determination of wages, rent, interest, and profit; theory of the firm; problems of monopoly, agriculture, taxation; international economic relations. ECON-120-0-2204

ECON 399. Honors Seminar in Economics. (3). (For sophomores in Honors Program—scheduled irregularly.) Readings and discussions. Open to students in the Honors Program not majoring in economics. ECON-399-0-2204

ECON 499. Seniors Honors Thesis. (2) I, II, S. Open only to seniors in the Arts and Sciences honors program. ECON-499-0-2204

Undergraduate and graduate credit in minor field

ECON 505. Introduction to the Civilization of South Asia I. (3) I. Interdisciplinary survey of the development of civilization in South Asia, geographical and demographic context, philosophical and social concepts, economic, social and political institutions, literature and historical movements. (Same as HIST 505, POLSC 505, SOCIO 505, ANTH 505.) ECON-505-0-2204

ECON 506. Introduction to the Civilization of South Asia II. (3) II. Interdisciplinary survey of recent and contemporary civilization in India, Pakistan, Ceylon, Nepal, and Afghanistan, including recent history, current economy, religion, culture, languages and literature, geography, social and political structures and ideas. (Same as HIST 506, POLSC 506, SOCIO 506, ANTH 506.) ECON-506-0-2204

ECON 510. Intermediate Macroeconomics. (3) I, II, S. An examination of the behavior of the economy as a whole, including an analysis of the national income account, consumption, investment, money, interest, the price level, the level of employment, monetary and fiscal policy, and economic growth. Pr.: ECON 110. ECON-510-0-2204

ECON 520. Intermediate Microeconomics. (3) I, II, some S. An examination of the theories of consumer behavior and demand, and the theories of production, cost, and supply. The determination of product prices and output in various market structures, and an analysis of factor pricing. Introduction to welfare economics. Pr.: ECON 120. ECON-520-0-2204

ECON 530. Money and Banking. (3) I, II, S. Nature, principles, and functions of money; development and operation of financial institutions in the American monetary system, with emphasis on processes, problems, and policies of commercial banks in the United States. Pr.: ECON 110. ECON-530-0-2204

ECON 532. Fiscal Operation of State and Local Government. (3) I. Designed for students who plan careers related to state or local government. Selected topics in state and local taxation and expenditure. Pr.: ECON 110 and permission of instructor. ECON-532-0-2204

ECON 540. Managerial Economics. (3) II. Microeconomic topics applicable to understanding and analyzing firm behavior: optimization, demand, estimation, production and cost theory. Applications to business problems. Pr.: ECON 120, an introductory level statistics course, and MATH 205. ECON-540-0-2204

ECON 555. Urban and Regional Economics. (3) I, II. An examination of the determinants of the economic performance of urban and regional economies, including theory, problems, and policy. Pr.: ECON 120. ECON-555-0-2204

ECON 599. Economics Seminar. (Var. 1-3). Seminars of special interest will be offered on sufficient demand. Pr.: Consent of instructor. ECON-599-0-2204

Undergraduate and graduate credit

ECON 620. Labor Economics. (3) I. Economics of the labor market-labor force composition and trends, structure and characteristics of labor markets, wages, employment, and unemployment; economics of trade unions; current issues. Pr.: ECON 120 or consent of instructor. ECON-620-0-2204

ECON 627. Contemporary Labor Problems. (3) II. Emphasis on current research and public policies dealing with such matters as full employment, poverty, discrimination, social security, unemployment insurance, health care, minimum wages, training, and education. Pr.: ECON 620 or consent of instructor. ECON-627-0-2204

ECON 631. Principles of Transportation. (3) II. The historical development and economic importance of rail, motor, air, water, and pipeline transportation in the United States—routes, services, rates, public regulation. Pr.: ECON 110. ECON-631-0-2204

ECON 633. Public Finance. (3) II. Course seeks answers to questions such as: Which goods should be provided by the private sector and which by the public sector (government)? With what criteria are public expenditures evaluated? What is an equitable and efficient tax system? Who bears the tax burden? What aspects of existing taxes need reform? Pr.: ECON 110. ECON-633-0-2204

ECON 636. Capitalism and Socialism. (3) II. A survey of Marxian economics, major perspectives on U.S. capitalism, market and self-governing socialism, and the Soviet, Chinese, and other communist economies. Pr.: ECON 110. ECON-636-0-2204

ECON 640. Industrial Organization and Public Policy. (3) II. An examination of measures and determinants of industrial concentration, and an analysis of market structure, conduct, and performance, and policies related to performance. Pr.: ECON 120. ECON-640-0-2204

ECON 681. International Trade. (3) I, some S. Principles of international trade and finance, including production, exchange, commercial policy, resource movements, balance of payments, foreign currency markets, and policies for internal and external balance. Pr.: ECON 110. ECON-681-0-2204

ECON 682. Economics of Underdeveloped Countries. (3) I, some S. Factors influencing the economic modernization of the less-developed countries. Emphasis on capital formation, investment allocation, structural transformation, population growth, development planning, and the international economics of development. Pr.: ECON 110. ECON-682-0-2204

ECON 686. Business Fluctuations and Forecasting. (3) I. Types of business fluctuations; measurement of business cycles; theories of the causes of business cycles; proposals for stabilizing business activity; techniques of forecasting business activity. Pr.: ECON 110. ECON-686-0-2204

ECON 690. Monetary, Credit, and Fiscal Policies. (3) II. Goals of aggregative economic policy, conflicts among goals, and measures to resolve conflicts; money markets; targets of central bank control; the relative strength of monetary and fiscal policies; rational expectations hypothesis and policy ineffectiveness debate; term structure of interest rates. Pr.: ECON 530. ECON-690-0-2204

ECON 699. Seminar in Economics. (1-3). On sufficient demand. Seminars of special interest will be offered on demand. Pr.: ECON 120. ECON-699-0-2204

ECON 730. Introduction to Econometrics. (3) II, some S. Analytical and quantitative methods used in economics. Applications to specific problems. Pr.: MATH 220 or 500 and STAT 702 or consent of instructor. ECON-730-0-2204

ECON 795. Problems in Economics. (Var.) I, II, S. Advanced study on an individual basis is offered in money and banking, public finance, general economics, international trade, labor relations, transportation. Pr.: Background of courses needed for problem undertaken. ECON-795-3-2204

Graduate credit

ECON 801. Topics in Monetary Theory. (3) I. In even years. Emphasis on recent literature of monetary economics; Federal Reserve control of the money stock, the demand for money; money and economic activity; monetary targets and indicators. Pr.: ECON 510 and ECON 530. ECON-801-0-2204

ECON 805. Income and Employment Theory I. (3) II. Determination of national income, employment, and the price level. The theories of J.M. Keynes are emphasized along with selected post-Keynesian developments in theories of consumption, investment, money, the interest rate, and the price level. Pr.: ECON 120 and 510 or consent of instructor. ECON-805-0-2204

ECON 810. History of Economic Thought. (3) I. Development of economic ideas and doctrines and the relation of these to conditions existing when they were formulated. Pr.: ECON 110. ECON-810-0-2204

ECON 815. Value and Distribution Theory. (3) I. Neoclassical value and distribution theory; theories of imperfect competition; introduction to general equilibrium theory and dynamic analysis. Pr.: ECON 520 or consent of instructor. ECON-815-0-2204

ECON 823. Advanced International Economics. (3) II. Theoretical and policy issues related to the international monetary system, capital movements, exchange rate systems, the U.S. balance of payments, and trade of underdeveloped countries. Pr.: ECON 681 or consent of instructor. ECON-823-0-2204

ECON 832. Public Sector Analysis. (3) II. In odd years. Conditions for economic efficiency in the public sector; public good production functions; non-market decision making; rationale for public sector growth; systems analysis, cost-benefit and related techniques of allocating public goods. Pr.: ECON 633 and 815. ECON-832-0-2204

ECON 840. Managerial Economics. (3) I. Economic analysis of production, cost, and demand functions. Application of economic models to managerial decision making. Pr: ECON 520, MATH 205, and one course in statistics with a prerequisite in the same department. ECON-840-0-2204

ECON 860. Growth and Development Theories. (3) II. Advanced theories of economic growth and development models. Topics include optimum savings, allocations of investment, investment criteria, technical change, programming models, and alternative designs for development policies. Pr.: ECON 682 or consent of instructor. ECON-860-0-2204

ECON 898. Research in Economics. MA—Master's report. ECON-898-4-2204

ECON 899. Research in Economics. MA—Research for Master's thesis. ECON-899-4-2204

ECON 905. Income and Employment Theory II. (3) I. Aggregative econometric models; dynamic analysis—growth models, the stability of macroeconomic systems. Other current developments in macroeconomic theory. Pr.: ECON 805 or consent of instructor. ECON-905-0-2204

ECON 920. Labor Economics Seminar. (3) I. A critical analysis of wage theories, collective bargaining and unemployment problems. Pr.: ECON 620 or consent of instructor. ECON-920-0-2204

ECON 925. Location of Economic Activities. (3) II. An examination of the theory of location including central place theory, location of the individual producer, industrial location patterns, and urban land use models. Also includes application of theoretical models to current urban problems. ECON-925-0-2204

ECON 935. Econometric Methods. (3) I. Quantitative methods of research used in economics. Pr.: ECON 730 or consent of instructor. ECON-935-0-2204

ECON 940. Economic Welfare and Public Policy. (3) II. In odd years. Theory of welfare economics, with application to current economic problems and policy. Pr.: ECON 815 or consent of instructor. ECON-940-0-2204

ECON 945. Advanced Economic Theory. (3) II. A study of traditional theories of a firm and competitive market in the light of contemporary thought. General equilibrium theory. Modern microeconomic theories, with attention given to risk and uncertainty. Pr.: ECON 815. ECON-945-0-2204

ECON 955. Theory and Methods of Regional Economic Analysis. (3) I. A consideration of differences in regional and urban growth; comparison of alternative growth theories; methods of analyzing regional economics such as input-output analysis, linear programming, industrial complex, and spatial interaction models. Pr.: ECON 925 or consent of instructor. ECON-955-0-2204

ECON 999. Research in Economics. Ph.D.—Research for Ph.D. dissertation. ECON-999-4-2204

English

Henry J. Donaghy, head of department

Professors Carpenter,* Donaghy,* Eitner,* Johnston,* Keiser,* McCarthy,* McGhee,* Noonan,* Rees,* and Stewart;* Associate Professors Adams,* Agosta,* Bixler,* Cohen, Conrow,* Dees,* Grindell,* Hedrick,* Holden,* Nyberg,* Royster,* M. Schneider,* and L. Warren;* Assistant Professors Brondell,* M. Donnelly,* Geissler, Gillespie, Hall, Heller,* Nelson, and H. Schneider; Instructors Baker, Barnes, Bussing, Clark, Kolonosky, Rochat, Smith, P. Stewart, and A. Warren; Emeriti: Professors Davis, Higginson, Moses, and Rogerson; Associate Professors Ansdell, Jones, and Koch; Assistant Professors Glenn and Laman; Instructors Bergman and Vance.

Undergraduate study

Students may elect to earn a B.A. in the department through a course of study based on one of the following three patterns.

Literature

Core courses (9 hours)*

One sequence of survey courses (6 hours)

ENGL 260	British Survey I **and**	3
ENGL 265	British Survey II	3
	or	
ENGL 280	American Survey I **and**	3
ENGL 285	American Survey II	3

Four three-credit courses from 600-799 offerings (12 hours)

Note: students submitting American survey sequence must take at least one 600-799 level course in British literature; students submitting British surveys must take at least one 600-799 level course in American literature.

Electives at the 500 level or above (6 hours)

or student may substitute:

one course from the introduction to genres listings

ENGL 310	Introduction to Fiction	3
ENGL 320	Introduction to the Short Story	3
ENGL 340	Introduction to Poetry	3
ENGL 345	Introduction to Drama	3

or one course from the humanities sequence

ENGL 230	Humanities: Classical Cultures	3
ENGL 231	Humanities: Medieval & Renaissance	3
ENGL 233	Humanities: Baroque & Enlightenment	3
ENGL 234	Humanities: Modern	3
ENGL 492	Humanities: Seminar	3

or a third survey course
ENGL 260, 265, 280, 285 (see above)

Total—33 hours

A student must take at least six hours of American literature in the total program.

Literature and creative writing

Core courses (9 hours)*
Any two survey courses (6 hours)
ENGL 260, 265, 280, 285. (see literature listing)

Two three-credit courses in literature and English language from the 600-799 offerings (6 hours)

Note: students submitting two American survey courses must take at least one 600-799 level course in British literature, and students submitting two British survey courses must take at least one 600-799 level course in American literature.

ENGL 500	**Introduction to Creative Writing**	**3**

Three three-credit courses in writing at the advanced level, in at least two genres (9 hours)

Total—33 hours

A student must take at least six hours of American literature in the total program.

*Core:

ENGL 250	**Forms of Literature**	**3**
	Shakespeare	**3**

One of the following (3 hours)

ENGL 300	English Language Study	3
ENGL 530	Modern English Grammar	3
ENGL 780	Introduction to Linguistics	3
ENGL 790	History of the English Language	3

Literature with teaching certification

ENGL 250	**Forms of Literature**	**3**
	Shakespeare	**3**
ENGL 530	**Modern English Grammar**	**3**

Any two survey courses (6 hours)
ENGL 260, 265, 280, and 285 (see literature listing)

Three three-credit courses from the 600-799 offerings (9 hours)

Note: students submitting two American survey courses must take at least one 600-799 level course in British literature, and students submitting two British survey courses must take at least six hours of 600-799 American literature courses.

ENGL 400	Advanced Composition	3
ENGL 545	Literature for Adolescents	3
	Electives at the 500 level or above	6

or student may substitute;

one course from the introduction to genres listings

ENGL 310	Introduction to Fiction	3
ENGL 320	Introduction to the Short Story	3
ENGL 340	Introduction to Poetry	3
ENGL 345	Introduction to Drama	3

or one course from the humanities sequence

ENGL 230	Humanities: Classical Cultures	3
ENGL 231	Humanities: Medieval & Renaissance	3
ENGL 233	Humanities: Baroque & Enlightenment	3
ENGL 234	Humanities: Modern	3
ENGL 492	Humanities: Seminar	3

or a third survey course
ENGL 260, 265, 280, 285 (see above)

Total—36 hours

A student must take at least six hours of American literature in the total program.

Teacher certification

Students preparing to teach English in high school may adopt either of two programs: the major outlined above, leading to the B.A. degree; or the major in secondary education, leading to the B.S. degree. Majors desiring certification should consult their advisors in the English department. For specific certification requirements in secondary education, please see the College of Education section of this catalog.

Courses for non-majors

The department offers many general education courses for the non-major student. All are intended to introduce such students to the appreciation of language and literature. Examples are: ENGL 210, 220, 230, 231, 233, and 234; 310; 320; 340; 345; 350; 360; 365; 370; 375; 387; 492; 505, 510; 515; 520; 560; 570; 702; and 751. In general it is proper to substitute in any program of study an advanced course for an elementary one, if the student so elects and the teacher consents. Only one course among ENGL 230, 231, 233, 234, 310, 320, 340, 345, and 492 may be taken for major credit.

Graduate study

The department awards both the M.A. and the Ph.D. For the Ph.D., the emphasis may be on either British or American literature; for the M.A., the emphasis may be on one of the two literatures, or creative writing, or language and composition.

Candidates for graduate work should have completed an undergraduate major with at least 24 hours in English above freshman composition; otherwise, they will be asked to do additional undergraduate work to make up deficiencies. The Graduate Record Examination is required of doctoral applicants; additional requirements of the Graduate School may be found in the appropriate section of this catalog.

Requirements for the M.A. include a minimum of 30 semester hours of course work and research. Candidates in the British and American literature option must demonstrate competence in one foreign language. Students in creative writing or in language and composition may substitute ENGL 810, Old English, for the language requirement. A written and an oral examination are required (though the oral is often waived). A two-hour report is required as are ENGL 790, History of the English Language, (unless waived) and ENGL 802, Graduate Studies in English.

Requirements for the Ph.D. include a minimum of 60 semester hours of course work beyond the B.A., and 30 hours of research on the dissertation. Candidates must demonstrate competence in two foreign languages or in one foreign language plus a specified substitute for the second, or fluency in reading a single foreign language, to the degree expected of entering graduate students in that language. They must pass a written preliminary examination and write an acceptable dissertation and defend it in a final oral examination.

For more detailed and current information about either the M.A. or the Ph.D., consult the Chairman of Graduate Studies, Department of English, Manhattan, Kansas 66506.

Courses in English

ENGL 030. Writing Laboratory. (2) I, II, S. Credit/No Credit. Laboratory practice in writing for all students who need review in fundamentals of composition. Especially designed for students who have difficulty in meeting standards in English Composition I and II, but also designed to assist students who desire to improve their composition skills. Hours are not applicable toward degree requirements. Pr.: Consent of instructor. ENGL-030-1-1501

DAS 060. Intensive English. (10) S. Intensive study of English for native speakers of other languages. Instruction in English language structure, writing, reading, speaking, and comprehension. Pr.: Provisional graduate or undergraduate KSU admission; TOEFL score of 470-525. ENGL-060-0-1508

ENGL 075. English for International Students. (3) I, II. Distinguished from DAS 060 by being a non-intensive three hour university support course. English structure, reading, and writing for graduate or undergraduate non-native speakers who wish to reduce a written language deficiency or to prepare for Composition I. Required of students who do not pass the Written English Proficiency Test. Students may also be admitted on recommendation of their advisor. Repeatable if necessary. ENGL-075-0-1508

Undergraduate credit

ENGL 100. English Composition I. (3) I, II, S. Instruction in the organization of expository writing. Taught as laboratory-workshop, the course offers extensive practice in the writing of English themes as models of non-fiction prose. Theme and paragraph organization and the basic elements of sentence structure and grammar receive emphasis. ENGL-100-0-1501

ENGL 110. English Honors Composition I. (3) I, II, S. Critical reading and composition for freshmen whose scores on their entrance examinations indicate that they will benefit from a more sophisticated and challenging program than that of ENGL 100. Students may also be admitted at the discretion of the Chairman of the English Department Honors Committee. ENGL-110-0-1501

ENGL 120. English Composition II. (3) I, II, S. Continues instruction offered in English Composition I. Emphasizing the practice of expository and persuasive writing, the course analyzes prose models of expository writing and further instructs students in grammar, punctuation, and English usage. Pr.: ENGL 100 or 110. ENGL-120-0-1501

ENGL 125. English Honors Composition II. (3) I, II. Advanced critical reading and composition. Students who receive "A" in ENGL 100 may, on the recommendation of their instructor and the Chairman of the English Department Honors Committee, be admitted to ENGL 125. Students who are members in good standing of one of the various college honors programs may also be admitted. Otherwise, admission is on the same basis as that for ENGL 110. ENGL-125-0-1501

ENGL 200. Intermediate Composition. (3) I, II, S. To improve and refine writing skills beyond those which are characteristic of freshman-level writing: based on individual student needs, the course provides further work on organization, sentence structure, diction, and rhetoric. Pr.: ENGL 120 or 125. ENGL-200-0-1501

ENGL 201. Writing the Public Essay. (3) I, II. Instruction in and practice of writing papers suitable for presentation to social, public, or professional forums. Pr.: ENGL 120 or 125. ENGL-201-0-1501

ENGL 205. The Research Paper. (2) I, II, S. Surveys the process of writing a research paper, from the initial choice of topic to the final documented paper. Not for major credit. Pr.: ENGL 100. ENGL-205-0-1501

ENGL 210. The Uses of Poetry. (1) I, II, S. Credit/No Credit only. Not for major credit. To provide the experience of poetry read for pleasure, for knowledge, and for personal fulfillment. Repeatable once. ENGL-210-0-1502

ENGL 220. Fiction into Film. (2) I, II, S. Discussions of film adaptation of works of literature. Not for major credit. ENGL-220-0-1501

ENGL 230. Humanities: Classical Cultures. (3) I, S. ENGL-230-0-4901

ENGL 231. Humanities: Medieval and Renaissance. (3) II, S. ENGL-231-0-4901

ENGL 233. Humanities: Baroque and Enlightenment. (3) I, S. ENGL-233-0-4901

ENGL 234. Humanities: Modern. (3) II, S. This and the three courses above seek to develop a greater understanding, appreciation, and enjoyment of the humanistic resources of Western culture. The student is introduced to the great works of literature, philosophy, art, music, and religion in each major period. The courses may be taken individually and in any order. ENGL-234-0-4901

ENGL 250. Forms of Literature. (3) I, II, S. Elements of literary form and style: an introduction to criticism for English majors. Intended as a first course in the analysis of form and technique in various kinds of literary work, and thus as an introduction to literary terms commonly used in later courses. Readings from a broad range: poems, plays, essays, and novels. ENGL-250-0-1502

ENGL 260. British Survey I. (3) I, II, S. English literature from Anglo-Saxon times through Milton. Will apply to survey requirement for English majors. ENGL-260-0-1502

ENGL 265. British Survey II. (3) I, II, S. English literature from Dryden to the end of the nineteenth century. Will apply to survey requirement for English majors. ENGL-265-0-1502

ENGL 280. American Survey I. (3) I, II, S. An introductory review of our literary history from the early accounts of colonization through the American Renaissance. Will apply to survey requirement for English majors. ENGL-280-0-1502

ENGL 285. American Survey II. (3) I, II, S. An introductory review of our literary history from the Civil War to the present. Will apply to survey requirement for English majors. ENGL-285-0-1502

ENGL 301. Writing and the Law: Legislative Analysis. (3) I, II. Practice in criticizing and constructing arguments about interpretations of statutes (administrative regulations, ordinances, state and federal codes, constitutions) in the context of particular facts. Close attention to recognizing and resolving problems of ambiguity and vagueness. Individual tutorial is an important feature of the course: Pr.: ENGL 120 or 125. ENGL-301-0-1501

ENGL 310. Introduction to Fiction. (3) I, II, S. Selected short stories, novellas and novels from world literature, with emphasis on the present. Concern for the forms of fiction and critical analysis. ENGL-310-0-1501

ENGL 320. Introduction to the Short Story. (3) I, II, S. Study of American, British, and Continental stories. ENGL-320-0-1501

ENGL 340. Introduction to Poetry. (3) I, II, S. Close reading of poems and analysis of poetic genres, with emphasis on modern poetry. ENGL-340-0-1502

ENGL 345. Introduction to Drama. (3) I, II, S. Study of drama from classical times to the present. ENGL-345-0-1502

ENGL 350. Introduction to Shakespeare. (3) I, II, S. Study of representative comedies, histories, and tragedies. ENGL-350-0-1502

ENGL 360. British Literature: Medieval and Renaissance. (3) I, II, S. Major works to about 1700, selected for the general student; emphasizing Chaucer, Shakespeare, and Milton. Will not apply to survey requirement for English majors. ENGL-360-0-1502

ENGL 365. British Literature: Enlightenment to Modern. (3) I, II, S. Major works since about 1700, selected for the general student. Will not apply to survey requirement for English majors. ENGL-365-0-1502

ENGL 370. American Literature: Colonial Through Romantic. (3) I, II, S. Major works selected for the general student. Will not apply to survey requirement for English majors. ENGL-370-0-1502

ENGL 375. American Literature: Realists and Moderns. (3) I, II, S. Major works selected for the general student. Will not apply to survey requirement for English majors. ENGL-375-0-1502

ENGL 387. Great Books. (3) I, II, S. Introduction to world classics from past to present. Not for English majors. Repeatable once with change of syllabus. ENGL-387-0-1502

ENGL 395. Topics in English. (0-3) I, II, S. Selected studies in literature and language. Repeatable with change in topic. Pr.: Consent of instructor. ENGL-395-0-1501

ENGL 399. Honors Seminar in English. (1-3) I
Readings and colloquia in selected masterpieces. May not be used for English major credit, nor to satisfy the three-course requirement in humanities. Pr.: Honors students only. ENGL-399-0-1501

ENGL 400. Advanced Composition. (3) I, II, S. Expository writing, primarily for candidates for the teaching certificate in Secondary Education. Pr.: ENGL 120 or 125. ENGL-400-0-1501

ENGL 401. Writing and the Law: Case Analysis. (3) I. In alternate years. Practice in the close reading of judicial opinions, and in criticism and construction of arguments about their bearing on novel fact situations. The focus is on accurate apprehension of constituent issues and argument structure, and careful scrutiny of potential analogies. Features individual tutorial. Pr.: ENGL 301 or 340. ENGL-401-0-1501

ENGL 405. Narrative Writing. (3) I. Subjects selected from the student's particular field of work; exposition of mechanisms, processes, and general expository writing. ENGL-405-0-1507

ENGL 415. Written Communication for Engineers. (3) I, II, S. Study of and intensive use of writing forms characteristic of professional practice. Pr.: Enrollment in the College of Engineering with junior or senior standing, and ENGL 100 or equiv. with A or B credit, or ENGL 100 and 120 or equiv. ENGL-415-0-1501

ENGL 416. Written Communication for the Sciences. (3) I, II. Theory and intensive writing practice for students in the basic and applied sciences. Junior or senior standing and completion of ENGL 100 and ENGL 120. Will not substitute for ENGL 415. ENGL-416-0-1501

ENGL 420. Writing Children's Literature. (3) I and II. Writing book-length or magazine-length prose for children or material to be presented to children. Pr.: ENGL 120 or 125. ENGL-420-0-1501

ENGL 492. Humanities Seminar. (3) I, II. Study in depth of selected major figures and movements in Western arts, ideas, and literature. Offered each semester within one of the chronological periods of the introductory courses. Pr.: Appropriate introductory humanities course (or an equiv. background, such as courses in western civilization, art, or world literature, with consent of instructor). ENGL-492-0-1501

ENGL 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the Arts and Sciences honors program. ENGL-499-4-1501

Undergraduate and graduate credit in minor field

ENGL 500. Introduction to Creative Writing. (3) I, II, S. For those beginning the craft of imaginative writing; a practical introduction to poetry and short fiction. Pr.: ENGL 120 or 125. ENGL-500-0-1502

ENGL 505. Themes in Literature. (1-3) I, II, S. Explorations of the literary treatment of important and recurring themes. Repeatable with change in theme. Pr.: ENGL 120 or 125. ENGL-505-0-1502

ENGL 510. Literary Kinds. (1-3) I, II, S. Examinations of the characteristics, the growth and development or the uses of specified literary genres. Repeatable with change in topic. Pr.: ENGL 120 or 125. ENGL-510-0-1502

ENGL 515. Literature and Society. (1-3) I, II, S. Language and literature in relation to social and cultural patterns and influences. Repeatable with change in topic. Pr.: ENGL 120 or 125. ENGL-515-0-1502

ENGL 520. Literature and Film. (3) II, S. This course deals with such matters as the turning of story, novel, play into film; the handling of point of view in fiction and film; the ways fiction and film affect each other in the development of techniques; and the comparison of the **forms** of literature and film. Pr.: ENGL 120 or 125, or consent of instructor. ENGL-520-0-1503

ENGL 525. Women in Literature. (3) I, II, S. Literary works, chiefly fiction, by or about women. Considers important writers since 1800 and significant themes in literature about women. Pr.: ENGL 120 or 125. ENGL-525-0-1502

ENGL 530. Modern English Grammar. (3) I, II, S. A systematic study of the structure of the English language and a consideration of current theories of analysis, such as traditional, structural, and transformational-generative. Primarily for candidates for the teaching certificate in Secondary Education-English or for Elementary Language Arts majors. Pr.: ENGL 120 or 125. ENGL-530-0-1505

ENGL 535. Literature of Aging. (3) I. The process of aging, as reflected and revealed in various literary forms: short story and novella, novel, drama, and poetry. Concerned with the problems and relationships of, and the responses to aging. Pr.: English 120 or 125 or consent of instructor. ENGL-535-0-1502

ENGL 540. Literature for Children. (3) I, II, S. A survey of literature for children, providing an opportunity for reading and evaluating books for children. For teachers of elementary grades and others interested in children's literature. Pr.: Sophomore standing. ENGL-540-0-1502

ENGL 545. Literature for Adolescents. (3) I, II, S. Selecting, reading, and evaluating books for adolescents. For teachers in the junior and senior high school and students of guidance for adolescents. Pr.: ENGL 120 or 125, and junior standing. ENGL-545-0-1502

ENGL 560. American Folklore and Folk Literature. (3) I, II, S. Focus on definition, form, and function of folktales and anecdotes, legends, proverbs and riddles, beliefs and customs, folklife and Anglo-American balladry. Pr.: Junior standing. ENGL-560-0-1502

ENGL 570. English Bible. (3) I, II, S. The Bible as literature and history; cultural and historical backgronds of the Old Testament. Pr.: ENGL 120 or 125. ENGL-570-0-1504

Undergraduate and graduate credit

ENGL 659. Literature of the New Black Renaissance. (3) II. A chronological study of Afro-American literature from 1954, including such authors as Baraka, Morrison, Baldwin, Brooks, Dumas, Bullins. Pr.: Junior standing. ENGL-659-0-1502

ENGL 699. Special Studies in English. (3) I, II, S. Intensive study of an author, a theme, or a genre in British or American Literature. Pr.: Senior or graduate standing and consent of instructor. ENGL-699-0-1501

ENGL 702. The Folk Tale. (3) II. Myths, legends, folktales of Europe and America. Half of course devoted to American Plains Indian oral literature, especially that dealing with cosmology and trickster tales. Pr.: Junior standing. ENGL-702-0-1502

ENGL 706. Arthurian Literature. (3) II. In alternate years. A survey of Arthurian literature in the medieval west, with emphasis on the writings of Malory and some attention to his influence on later English literature. Pr.: Junior standing. ENGL-706-0-1502

ENGL 707. Medieval Literature. (3) II. In alternate years. Study of selected themes and forms in medieval literature. Pr.: Junior standing. ENGL-707-0-1502

ENGL 708. Chaucer. (3) I, II, S. Pr.: Junior standing. ENGL-708-0-1502

ENGL 711. Elizabethan Non-dramatic Literature. (3) I. In alternate years. An introduction to the literature of the English Renaissance. Pr.: Junior standing. ENGL-711-0-1502

ENGL 712. Spenser. (3) I. In alternate years. Pr.: Junior standing. ENGL-712-0-1502

ENGL 714. British Drama to 1642. (3) I, S. In alternate years. A survey of the dramatic literature of Elizabethan and Jacobean times, exclusive of Shakespeare. Pr.: Junior standing. ENGL-714-0-1502

ENGL 716. Shakespeare: Comedies and Histories. (3) I, S. In alternate years. A study of Shakespearean drama from the first plays through about 1600, with emphases on the histories and comedies; special attention to the criticism and bibliography. Pr.: Junior standing. ENGL-716-0-1502

ENGL 717. Shakespeare: Tragedies and Romances. (3) II, S. In alternate years. A study of Shakespearean drama from about 1601 through the last plays, with emphases on the mature tragedies and the romances; special attention to the criticism and bibliography. Pr.: Junior standing. ENGL-717-0-1502

ENGL 721. Seventeenth Century Literature. (3) II, S. A survey of the principal non-dramatic writers, apart from Milton. 1600-1660. Pr.: Junior standing. ENGL-721-0-1502

ENGL 722. Milton. (3) II, S. Pr.: Junior standing. ENGL-722-0-1502

ENGL 724. Restoration and Eighteenth Century Drama. (3) I, S. In alternate years. A survey of English dramatic literature from 1660 to 1800. Pr.: Junior standing. ENGL-724-0-1502

ENGL 726. Eighteenth Century I. (3) I, S. English literature from the Restoration to the death of Swift, with emphases on Dryden, Swift, and Pope. Pr.: Junior standing. ENGL-726-0-1502

ENGL 727. Eighteenth Century II. (3) II, S. The age of Dr. Johnson and the beginnings of Romanticism. Pr.: Junior standing. ENGL-727-0-1502

ENGL 731. British Novel I. (3) I, S. A survey of British fiction from Defoe to the Brontes. Pr.: Junior standing. ENGL-731-0-1502

ENGL 732. British Novel II. (3) II, S. A survey of British fiction from Dickens and Thackeray to Galsworthy and Bennett. Pr.: Junior standing. ENGL-732-0-1502

ENGL 736. The Romantic Movement. (3) I, S. The poetry and prose of Blake, Wordsworth, Coleridge, Byron, Shelley and Keats. Pr.: Junior standing. ENGL-736-0-1502

ENGL 738. Early American Literature. (3) I. Literary beginnings in seventeenth-century Virginia and New England; eighteenth century prose and poetry, including the first plays and novels. Pr.: Junior standing and at least one other literature course. ENGL-738-0-1502

ENGL 739. The New England Transcendentalists. (3) II. In alternate years, S. A study of the Transcendental Movement, with emphases on Emerson and Thoreau. Pr.: Junior standing. ENGL-739-0-1502

ENGL 741. Nineteenth Century American Poetry. (3) II, S. Emphases on Poe, Whitman, and Dickinson. Pr.: Junior standing. ENGL-741-0-1502

ENGL 742. Nineteenth Century American Fiction I. (3) I, S. Emphases on Brown, Cooper, Poe, Hawthorne, and Melville. Pr.: Junior standing, or ENGL 280. ENGL-742-0-1502

ENGL 743. Nineteenth Century American Fiction II. (3) II, S. Emphases on Twain, James, Howells, Crane, and Norris. Pr.: Junior standing. ENGL-743-0-1502

ENGL 748. The Victorian Era. (3) II, S. The poetry of Arnold, Browning, and Tennyson; the criticism of Arnold; additional related prose. Pr.: Junior standing. ENGL-748-0-1502

ENGL 751. American Humor and Satire. (3) II, S. Emphases on works produced in the nineteenth and twentieth centuries. Pr.: Junior standing. ENGL-751-0-1502

ENGL 754. Twentieth Century British Novel. (3) II. British fiction from Conrad and Joyce to Greene and Waugh. Pr.: Junior standing. ENGL-754-0-1502

ENGL 756. Twentieth Century American Novel. (3) I, S. The American novel from Dreiser to figures of the 1940s. Pr.: Junior standing. ENGL-756-0-1502

ENGL 757. Twentieth Century American Short Story. (3) II, S. The development of the form since 1900. Pr.: Junior standing. ENGL-757-0-1502

ENGL 758. American Novel, 1950-1970. (3) II. In alternate years. A study of distinctive qualities of selected American novels since 1950. Pr.: Junior standing. ENGL-758-0-1501

ENGL 761. Advanced Creative Writing: Prose Fiction. (3) I, II, S. Advanced writing of prose fiction. Repeatable once. Pr.: ENGL 500, or proof of equiv. proficiency. ENGL-761-0-1507

ENGL 762. Advanced Playwriting. (3). Same as THTRE 762. ENGL-762-0-1507

ENGL 763. Advanced Creative Writing: Poetry. (3) I, II, S. Advanced writing of poetry. Repeatable once. Pr.: ENGL 500, or proof of equiv. proficiency. ENGL-763-0-1507

ENGL 764. Twentieth Century British Drama. (3) I, S. British drama from Wilde and Shaw to Pinter and his contemporaries. Pr.: Junior standing. ENGL-764-0-1502

ENGL 765. Twentieth Century American Drama. (3) II, S. American drama from O'Neill and Rice to Leroi Jones and his contemporaries. Pr.: Junior standing. ENGL-765-0-1502

ENGL 766. Twentieth Century British Poetry. (3) I. Development of British poetry from Hardy and Yeats to the present. Pr.: Junior standing, or ENGL 265. ENGL-766-0-1502

ENGL 767. Twentieth Century American Poetry. (3) II, S. Development of American poetry from Robinson and Frost to the present. Pr.: Junior standing, or ENGL 285. ENGL-767-0-1502

ENGL 790. History of the English Language. (3) II, S. The development of British and American English from Indo-European origins to the present. Pr.: Senior standing or consent of instructor. ENGL-790-0-1505

ENGL 792. Studies in Composition. (3) I, S. Examination of research and theories applicable to the study of written composition, of sources of information germane to written composition, and of current substantive issues involving written composition. Pr.: Junior standing and eighteen hours of English. ENGL-792-0-1501

ENGL 794. History and Theory of Composition. (3) II, S. An overview of the tradition out of which modern rhetoric and composition courses have emerged. Also an evaluation of current research in composition theory and methodology. Pr.: Junior standing, and eighteen hours of English. Advanced Composition (ENGL 400) is recommended. ENGL-794-0-1501

ENGL 795. Literary Criticism. (3) I, S. Major points of view in modern American and British criticism, with practice in the analysis and judgment of individual literary works. Pr.: Senior standing. ENGL-795-0-1502

ENGL 796. Theories of Grammar. (3) I, S. Comparative examination of the assumptions, aims, and procedures of four types of English grammar—the normative grammar of Robert Lowth, the historical grammar of Otto Jespersen, the structural grammar of Leonard Bloomfield, and the generative-transformational grammar of Noam Chomsky—and their application. Pr.: Junior standing, and Modern English Grammar (ENGL 530) or Introduction to Linguistics (LING 780). ENGL-796-0-1505

ENGL 798. Literature Proseminar. (3) II. An intensive experience in reading and discussing selected literary texts in particular critical contexts; emphasizes how various critical approaches contribute to the exploration and transmission by literature of humane values. Pr.: Junior standing and eighteen hours of English. ENGL-798-0-1502

ENGL 799. Problems in English. (Var.) I, II, S. Independent study in major authors, genres, and periods of English and American literature and language. Pr.: Background of courses needed for problem undertaken. ENGL-799-3-1501

Graduate credit

ENGL 802. Graduate Studies in English. (1) I, II, S. A survey of the principles of research and scholarship, the range of literary studies, basic bibliographies and other aids, and the techniques of writing documented papers. Required in the first year of study toward the M.A. in English as an orientation to the profession. ENGL-802-0-1502

ENGL 810. Old English. (3) I, S. The elements of Old English grammar, with readings in prose and poetry. Pr.: Consent of instructor. ENGL-810-0-1505

ENGL 811. Old English Poetry. (3) II, S. Pr.: ENGL 810 or consent of instructor. ENGL-811-0-1502

ENGL 812. Middle English Poetry. (3) I. Pr.: ENGL 790 or consent of instructor. ENGL-812-0-1502

ENGL 820. Selected Topics in the Study of Language. (3). Pr.: ENGL 790 or consent of instructor. ENGL-820-0-1505

ENGL 830. Chaucer Seminar. (3). Pr.: ENGL 708. ENGL-830-0-1502

ENGL 850. Shakespeare Seminar. (3). Pr.: ENGL 716 or 717. ENGL-850-0-1502

ENGL 861. Creative Writing Workshop: Short Fiction. (3) I, II, S. Advanced writing of short prose fiction. May be repeated twice for credit. Pr.: ENGL 761 or equiv. ENGL-861-0-1507

ENGL 862. Workshop in Playwriting. (3) I, II, S. Advanced writing in drama. May be repeated once for credit. Same as THTRE 862. Pr.: THTRE 762 (or ENGL 762). ENGL-862-0-1507

ENGL 863. Creative Writing Workshop: Poetry. (3) I, II, S. Advanced writing of poetry. May be repeated twice for credit. Pr.: ENGL 763 or equiv. proficiency. ENGL-863-0-1507

ENGL 864. Creative Writing Workshop: The Novel. (3) II. May be repeated twice for credit. Pr.: ENGL 761 or equiv. ENGL-864-0-1507

ENGL 870. Milton Seminar. (3). Pr.: ENGL 722 or consent of instructor. ENGL-870-0-1502

ENGL 890. Topics in Poetry. (3). Intensive study of a poet or group of poets, either British or American. Pr.: Consent of instructor. ENGL-890-0-1502

ENGL 892. Topics in Drama. (3). Intensive study of a dramatist or group of dramatists, either British or American. Pr.: Consent of instructor. ENGL-892-0-1502

ENGL 894. Topics in Fiction. (3). Intensive study of a novelist or group of novelists, either British or American. Pr.: Consent of instructor. ENGL-894-0-1502

ENGL 898. Master's Report. (2) I, II, S. ENGL-898-4-1501

ENGL 900. Bibliography and Methods of Research. (3) I, S. An introduction to textual, bibliographic and professional problems, required of Ph.D. candidates. ENGL-900-0-1502

ENGL 920. Selected Topics in the Study of Literature. (3) I, II, S. Intensive study of a topic covering a variety of literary genres and/or several periods and authors. Pr.: Graduate standing. ENGL-920-0-1502

ENGL 940. Studies in Sixteenth Century Literature. (3). Pr.: Consent of instructor. ENGL-940-0-1502

ENGL 950. Studies in Seventeenth Century Literature. (3). Pr.: Consent of instructor. ENGL-950-0-1502

ENGL 960. Studies in Eighteenth Century Literature: British. (3). Pr.: Consent of instructor. ENGL-960-0-1502
ENGL 965. Studies in Eighteenth Century Literature: American. (3). Pr.: Consent of instructor. ENGL-965-0-1502
ENGL 970. Studies in Nineteenth Century Literature: British. (3). Pr.: Consent of instructor. ENGL-970-0-1502
ENGL 975. Studies in Nineteenth Century Literature: American. (3). Pr.: Consent of instructor. ENGL-975-0-1502
ENGL 980. Studies in Twentieth Century Literature: British. (3). Pr.: Consent of instructor. ENGL-980-0-1502
ENGL 985. Studies in Twentieth Century Literature: American. (3). Pr.: Consent of instructor. ENGL-985-0-1502
ENGL 999. Research in English. (Var.) I, II, S. Pr.: Sufficient training to carry on the research undertaken. ENGL-999-4-1501

Courses in linguistics
Undergraduate and graduate credit

ENGL 681. General Phonetics. (3). Same as LING 681. ENGL-681-1-1502
ENGL 780. Introduction to Linguistics. (3) I, II, S. Same as LING and MLANG 780. ENGL-780-0-1502
ENGL 781. Introduction to Historical Linguistics. (3) II. ENGL-781-0-1502
ENGL 782. Language Typology. (3). ENGL-782-0-1502
ENGL 783. Phonology I. (3). Same as LING and MLANG 783. ENGL-783-0-1502
ENGL 784. Phonology II. (3). ENGL-784-0-1502
ENGL 785. Syntax I. (3). Same as LING and MLANG 785. ENGL-785-0-1502
ENGL 786. Syntax II. (3). Same as MLANG 786. ENGL-786-0-1502
ENGL 787. Advanced Syntax. (3). ENGL-787-0-1502
ENGL 788. Advanced Phonology. (3). ENGL-788-0-1502
ENGL 789. Topics in Linguistics. (3). Same as LING 789. ENGL-789-0-1502
ENGL 791. Methods and Techniques of Learning a Second Language. (3). ENGL-791-0-1502

Geography

S.E. White,* head of department

Professors Kromm* and Siddall;* Associate Professors Seyler,* Stover,* and White;* Assistant Professors Bussing* and Nellis;* Emeritus: Professor Self.

Geographers, in studying the differences in human activities from one place to another, deal with vital questions about current national and international situations.

Geography is a very broad inquiry into the state of the world today, advanced by bringing together the ideas and concepts of many disciplines, especially the social sciences, to obtain some measure of understanding about specific areas.

Geographers also may pursue a more theoretical inquiry into the major problems of human society by examining spatial structure and processes using various techniques of mathematical and cartographic analysis of spatial phenomena, computer mapping, and remote sensing.

A typical and traditional problem in geography concerns man's impact on the land. Air pollution, contamination of waterways,

decaying urban areas, destruction of the landscape, and the like, can only be well understood by examining the interrelations of numerous factors such as technology, population density, legal structure, affluence, and cultural traditions.

Undergraduate study

Students of geography may pursue a traditional major in geography or choose the geography: pre-planning option. The bachelor of science or the bachelor of arts degree may be earned for either option.

Geography (B.A. or B.S.)
Requirements for a major in geography are as follows:

GEOG 100	World Regional Geography	3
	or	
GEOG 200	Man, Space, & the Environment	3
GEOG 220	Environmental Geography I	4
GEOG 221	Environmental Geography II	4
GEOG 440	Geography of Natural Resources	3
GEOG 450	Geography of Economic Behavior	3
GEOG 470	Cartography	3
One course at 500 or 600 level		
One course at 700 level (except GEOG 700, 702 or 705)		
Additional courses at the 490 level or above to total 30 hours		
STAT 330	Elementary Statistics for the Social Sciences (or its equivalent)	3

Although the major requirements for the B.A. or B.S. degrees are the same, college requirements differ as described earlier in the College of Arts and Sciences section.

The student may pursue a general program in geography, or may choose to develop a concentration in either environmental studies or community studies. Other concentrations also may be developed to reflect the particular interests of a student. For example, a student may earn a teaching certificate while working toward a degree in geography.

Another curriculum leads to the bachelor of science degree in secondary education. For information concerning this program see the College of Education section of this catalog.

Geography: pre-planning (B.A. or B.S.)
Geography is a very appropriate discipline for students who wish to pursue a career in a planning-related field or desire to take graduate training in planning. The geography: pre-planning option is designed to provide a student with both a broad interdisciplinary background and a geographic core curriculum.

The geography course requirements for the pre-planning option are identical to those listed above for the geography major. In addition students must take:

PLAN 315	Introduction to Planning	3
and at least three of the following		
ECON 555	Urban & Regional Economics	3
HIST 551	American Urban History	3
POLSC 718	Urban Politics	3
SOCIO 531	Urban Sociology	3
PLAN 715	Planning Principles	3

Graduate study

Graduate work in geography is offered in the cultural, economic, and environmental aspects of the discipline. Closely related courses in the social sciences, history, planning, and agriculture may be made an integral part of the student's program, and it is possible to arrange a primary concentration in geography with a secondary specialization in regional or community planning for those students interested in a planning career. All candidates for the Master of Arts degree are required to take GEOG 700, Quantitative Analysis in Geography, (except option B students), GEOG 800, Graduate Colloquium, and GEOG 820, History and Philosophy of Geography.

Students may choose, in consultation with their advisors, one of three programs leading to the M.A. degree.

Option A requires 30 hours of graduate credit including six hours of credit for a thesis. Of the 24 hours of credit required in course work, no fewer than 15 hours must be in geography.

Option B is for students who intend to pursue or continue a career in public school or junior college teaching. It is open only to persons who are already certified to teach at the public school or junior college level in any state, or to those who will make courses required for such certification an integral part of their program. Thirty hours of graduate level course work is required including two credits of GEOG 898, Master's Report, which shall consist of the design of a teaching syllabus in some subfield of geography. At least 18 credit hours must be in geography. This option is not suitable for any student who may ultimately continue for the doctorate.

Option C is a non-thesis program designed for students who have a specific professional goal in mind other than teaching at any level, and who do not intend to continue for a Ph.D. The student may choose from several approved course groupings. Thirty hours of graduate level work are required of which twelve hours may be outside the geography department.

The geography department is equipped with a small reference library, a good collection of research maps, a cartography laboratory, and a seminar room. The University library contains a large collection of geographical journals. Computer time is available without charge to students for thesis and other research.

Courses in geography

Undergraduate credit

GEOG 100. World Regional Geography. (3) I, II. Introduction to geography structured on a framework of major world regions and countries. With the regional approach is an explicit discussion of the essential concepts of certain systematic specialties, such as political, social, economic, and urban geography. GEOG-100-0-2206

GEOG 200. Man, Space, and the Environment. (3) II. Spatial aspects of human organization and behavior are examined through selected concepts in modern geography. The course is especially appropriate for students interested in the social and behavioral sciences. GEOG-200-0-2206

GEOG 201. Man, Space, and the Environment. (Honors). (3) I. In odd years. Spatial aspects of human organization and behavior are examined through selected concepts in modern geography. The course is especially appropriate for students interested in the social and behavioral sciences. Pr.: Membership in Arts and Sciences Honors Program. GEOG-201-0-2206

GEOG 220. Environmental Geography I. (4) I, II. A basic physical geography course emphasizing the atmosphere and hydrosphere and treating related problems such as air pollution, drought, and floods. Introduces tools used by geographers in environmental analysis. Three hours lec. and one two-hour lab a week. GEOG-220-1-1917

GEOG 221. Environmental Geography II. (4) I, II. Emphasizes the geosphere and biosphere, including processes, patterns, and physical background for related issues such as energy, soil erosion, and natural hazards. Introduces remote sensing as a tool for environmental study. Three hours lec. and one two-hour lab a week including ground and optional aerial field trips. Pr.: Environmental Geography I. GEOG-221-1-1917

GEOG 310. Geography of Kansas. (3) I, II. A regional geographical analysis of Kansas including discussion of climate, landforms, soil, water, and minerals as well as patterns of settlement, population, agriculture, industry, transportation, and urban development. GEOG-310-0-2206

GEOG 399. Honors Seminar in Geography. (2-3) II. Selected topics. Open to non-majors in the Honors Program. GEOG-399-0-2206

GEOG 440. Geography of Natural Resources. (3) I. The distribution, significance, and environmental consequences of world agriculture, fishing, forestry, and mining, emphasizing the principles which account for the spatial variation in the production and consumption of natural resources. GEOG-440-0-2206

GEOG 450. Geography of Economic Behavior. (3) II. The location of manufacturing industries and patterns of commercial activity. Case studies and simulations are utilized with emphasis on modern concepts of site selection and community development. GEOG-450-0-2206

GEOG 460. Future Worlds. (3). Alternative future distributions of population, pollution, resource depletion, economic development, and human conflict will be treated in lectures and reading, and discussed by representatives of business, politics, religion, and academia. GEOG-460-0-2206

GEOG 470. Cartography. (3) I. Theory, interpretation, and design and drafting of maps, with emphasis on presenting quantitative data. GEOG-470-1-2206

GEOG 490. Problems in Geography. (Var.) I, II, S. Pr.: Consent of instructor. GEOG-490-4-2206

GEOG 498. Honors Tutorial in Geography. (1-3) I, II. Individual directed research and study of a topic in Geography, normally as a preliminary to writing a Senior Honors Thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the Honors Program of the College of Arts and Sciences, and permission of the instructor. GEOG-498-4-2206

GEOG 499. Senior Honors Thesis (2) I, II, S. Open only to seniors in the Arts and Sciences honor program. GEOG-499-4-2206

Undergraduate and graduate credit

GEOG 500. Geography of the United States. (3) II. In even years. A regional analysis of the United States with special attention to the historical, political, economic, and social factors which contribute to a real differentiation within the area. GEOG-500-0-2206

GEOG 620. Geography of Latin America. (3) II. A broad survey of the physical and human patterns of the Latin American culture area, past and present, with emphasis on the changing landscape features in the successive patterns of human occupancy. GEOG-620-0-2206

GEOG 640. Geography of Europe. (3) I. In odd years. People and their environment, their cultures, problems, and prospects in Europe west of the Soviet Union; trends of development as affected by changing political and economic factors. GEOG-640-0-2206

GEOG 650. Geography of the Soviet Union. (3) I. In even years. Soviet physical limitations, resource potentials, economic capabilities, and social issues, with particular emphasis on agriculture, manufacturing, urbanization, cultural diversity, and regional development. Pr.: Six hours of social science. GEOG-650-0-2206

GEOG 680. Seminar in Regional Geography. (1-3). Pr.: Consent of instructor. GEOG-680-0-2206

GEOG 700. Quantitative Analysis in Geography. (3) II. Quantitative methods employed in modern geographical research.. Applications of both statistical and mathematical approaches will be treated. Emphasis will be placed on interpretation and evaluation of techniques employed in spatial analysis. Pr.: One course in statistics. GEOG-700-0-2206

GEOG 702. Computer Mapping. (3) II. Familiarizes students with computer applications to mapping problems. Students will produce a series of maps on the printer and plotter using prepared programs, and in the process develop computer graphics skills to address problems in a real analysis, planning, and public administration. Pr.: One course in social science and one in natural science and junior standing. GEOG-702-0-2206

GEOG 705. Remote Sensing of the Environment. (2) I, II. Remote sensing and its application to earth study, especially environmental problems and land use. Course employs both readings and the use of imagery. One hour lec., two hours lab. Pr.: One course in physical science and one in biological science. GEOG-705-1-2206

GEOG 710. Geography of Hunger. (3) II. In even years. The problem of an adequate food supply for a rapidly growing world population; food deficit and surplus areas, possibilities of increased production, problems of distribution, and the future outlook. Pr.: Six hours of social science and junior standing. GEOG-710-0-2206

GEOG 715. World Population Patterns. (3) II. In even years. Geographical processes that govern population distributions, growth rates, and migrations. Emphasis on international comparisons and the implications for world society of continued differential growth rates. Pr.: Six hours of social science. GEOG-715-0-2206

GEOG 720. Geography of Land Use. (3) II. Critical factors affecting land use, scarcity, and management examined in a regional, national, and global context; land use classification systems and variation of land use patterns. Pr.: Six hours of social science and junior standing. GEOG-720-0-2206

GEOG 725. Geography of Water Resources. (3) II. In even years. Interpretation and analysis of water as a resource. Evaluation of water use emphasizing problems associated with geographic distribution, conflicting demands, regional development, and pollution. Pr.: Senior standing. GEOG-725-0-2206

GEOG 730. World Agricultural Systems. (3) I. In even years. Description and analysis of the spatial distribution of farm systems emphasizing traditional resource systems in the third world. The major objective is to analyze the interrelationships between natural and human elements in farm systems in order to gain an awareness and understanding of the complex issues involved in agricultural change and development. Pr.: Six hours of social science and junior standing. GEOG-730-0-2206

GEOG 740. Geography of Transportation. (3) I. In odd years. A consideration of the nature of spatial interaction, the various kinds of transport media, and the relationship between transporation and economic and social patterns. Pr.: Junior standing or consent of instructor; six hours of social science. GEOG-740-0-2206

GEOG 750. Urban Geography. (3) I. A study of geographic principles relating to the distribution, function and structure of cities; a geographic analysis and classification of urban settlements. Pr.: Six hours of social science or planning. GEOG-750-0-2206

GEOG 760. Human Impact on the Environment. (3) II. In even years. The social, economic, and political implications of the impact of human activity on the natural environment. Field research in environmental impact assessment. Pr.: Six hours of social science. GEOG-760-0-2206

GEOG 770. Perception of the Environment. (3) II. In odd years. An examination of the way people perceive their geographic environment and the role of perception in spatial behavior. Perceptions of neighborhoods, cities, states, nations, frontier regions, and environmental processes are explored. Pr.: Six hours of social science with one course above the introductory level, and six hours of natural science with one course above the introductory level. GEOG-770-0-2206

GEOG 780. Cultural Geography. (3) II. In even years. A study of the forms of human occupancy of landscapes, with consideration of innovations in the use of the landscape, the origins and dispersals of these innovations, and human attitudes toward the natural environment. Pr.: Six hours of social science. GEOG-780-0-2206

GEOG 790. Seminar in Cultural-Economic Geography. (1-3). Pr.: Consent of instructor. GEOG-790-0-2206

Graduate credit

GEOG 800. Graduate Colloquium. (2) I. The nature, aims, methods, and evaluation of geographical research. Required of all graduate students majoring in geography. GEOG-800-0-2206

GEOG 820. History and Philosophy of Geography. (2) I. A critical examination of the aims and methods of geography, especially in terms of its historical development and its logical structure. Pr.: Open to all graduate students in social sciences. GEOG-820-0-2206

GEOG 850. Topics in Environmental Geography. (1-3) I, II, S. Pr.: Consent of instructor. GEOG-850-3-2206

GEOG 860. Topics in Economic Geography. (1-3) I, II, S. Pr.: Consent of instructor. GEOG-860-3-2206

GEOG 870. Topics in Cultural Geography. (1-3) I, II, S. Pr.: Consent of instructor. GEOG-870-3-2206

GEOG 898. Master's Report. (2) I, II, S. For students enrolled in Geography Option B. Pr.: Registration in Graduate School, with sufficient training to carry on the line of research undertaken. Consent of instructor. GEOG-898-4-2206

GEOG 899. Thesis. (6) I, II, S. For students enrolled in Geography Option A. Pr.: Registration in Graduate School, with sufficient training to carry on the line of research undertaken. Consent of instructor. GEOG-899-4-2206

Geology

James R. Underwood, Jr.,* head of department

Professors Beck,* Chaudhuri,* Cullers,* Shenkel,* Twiss,* Underwood,* Walters,* and West;* Associate Professor Clark;* Assistant Professor Graf;* Emeriti: Professor Chelikowsky;* Assistant Professor Riseman.*

Traditionally defined as the study of the earth's composition, behavior, and history, geology now includes the study of the members of the solar system. As a science, it is both practical and highly theoretical.

The earth and other members of the solar system are dynamic physical systems composed of atoms interacting under varied conditions of temperature and pressure. Geology relies heavily on mathematics and other sciences—physics, chemistry, biology, and astronomy. In the solar system, the earth has been the only known habitat of life, where it has existed for at least the last three billion years.

Geologists operate in two laboratories: the earth itself (field laboratory) and the standard chemical, physical, or biological laboratory. However, geologists cannot control the variables affecting the natural processes operating in the field, as a chemist can control the variables experimentally in a laboratory. Geologists are the observers of processes in operation or already concluded and often must deduce conclusions from incomplete data or by analogy with processes that may be reproduced only in part in a laboratory.

Undergraduate study

The Department of Geology offers optional programs of study in geology and geophysics and cooperates with the College of Education in an earth science program for high school teachers. It also cooperates with the Department of Civil Engineering in a dual degree in civil engineering and geology and in a degree in geological engineering. For detailed plans of study, consult the head of the department.

Students in geology and in geophysics must have an overall average grade of C (not a C grade in each course) in their geology, other natural science, mathematics, and computer science courses.

Geology option

In addition to the general requirements for the B.A. or B.S. degree, the following must be completed:

GEOL 100	Introductory Geology	3
GEOL 130	Elementary Geology Laboratory	1
GEOL 200	Historical Geology	4
GEOL 502	Mineralogy & Petrology I	4
GEOL 503	Mineralogy & Petrology II	4
GEOL 507	Introductory Geochemistry	3

GEOL 520	Geomorphology	4
GEOL 530	Structural Geology	4
GEOL 570	Field Methods in Geology	2
GEOL 580	Paleobiology I	3
GEOL 581	Paleobiology II	3
GEOL 601	Geologic Presentation	1
GEOL 603	Sedimentary Processes & Systems	3
GEOL 703	Stratigraphic Geology	4
GEOL 718	Field Geology	6
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
BIOL 198	Principles of Biology	4
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 201	FORTRAN Language Laboratory	2

Geophysics option

In addition to the general requirements for the B.A. or B.S. degree, the following must be completed:

GEOL 100	Introductory Geology	3
GEOL 130	Elementary Geology Laboratory	1
GEOL 200	Historical Geology	4
GEOL 502	Mineralogy & Petrology I	4
GEOL 503	Mineralogy & Petrology II	4
GEOL 530	Structural Geology	4
GEOL 570	Field Methods in Geology	2
GEOL 601	Geologic Presentation	1
GEOL 602	Mineral Exploration	3
GEOL 703	Stratigraphic Geology	4
GEOL 718	Field Geology	6
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
MATH 222	Analytic Geometry & Calculus III	4
MATH 240	Elementary Differential Equations	4
MATH 551	Applied Matrix Theory	3
PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5
PHYS 561	Geophysics	3
BIOL 198	Principles of Biology	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
EE 519	Electric Circuits & Control	4
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 201	FORTRAN Language Laboratory	2

Earth science options for high school teachers

In addition to the general requirements for the B.A. or B.S. degree, the teacher certification requirements and the following must be completed:

GEOL 100	Introductory Geology	3
GEOL 130	Elementary Geology Laboratory	1
GEOL 502	Mineralogy & Petrology I	4
GEOL 512	Earth Science	3
GEOL 520	Geomorphology	4
GEOG 220	Environmental Geography I	4
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
PHYS 191	Descriptive Astronomy	3
PHYS 193	Descriptive Meteorology	3
BIOL 198	Principles of Biology	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4

See College of Education section for teacher certification requirements.

Special courses

Two courses outside the Department of Geology are offered especially for majors in geology and geophysics. These courses are: HIST 594, History of Geology in the Department of History, and PHYS 561, Geophysics in the Department of Physics.

Geological engineering

The Department of Geology cooperates with the Department of Civil Engineering in their option in Geological Engineering. Twenty credit hours of geology are required in this option, including GEOL 100, 130, 200, 502, 503, and 530 (see lists above).

Dual degrees in civil engineering and geology

Students interested in a career in foundation engineering and construction must complete the B.S. degree requirements in civil engineering and complete the general requirements for a B.A. or B.S. degree in the College of Arts and Sciences and the following GEOL 200, 502, 503, 520, 530, 703, and 718 (see lists above).

Transfer students

In addition to the general instructions to transfer students, those students planning to pursue one of the degree options in geology should complete as many of the following courses or their equivalents as possible:

CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
SPCH 105	Oral Communication I	2
GEOL 100	Introductory Geology	3
GEOL 130	Elementary Geology Laboratory	1
GEOL 200	Historical Geology	4
PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5
BIOL 198	Principles of Biology	4
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 201	FORTRAN Language Laboratory	2

Graduate study

Graduate degrees are essential for careers as professional geologists in business, government, or higher education.

The prerequisite to graduate work for the M.S. degree in geology is the completion of a four-year undergraduate program including suitable preparatory work in geology, chemistry, physics, biology, and mathematics. The Graduate Record Examination (aptitude test and advanced geology test) is required for entrance. Additional requirements of the Graduate School are listed in the appropriate section of this catalog.

The minimum requirement for the M.S. in geology is 30 semester hours, which includes at least two courses in supporting areas other than geology and six hours of research leading to successful completion of a thesis.

Research facilities include: a six-inch, 60-degree solid source mass spectrometer; hydrothermal equipment; X-ray diffractometer and spectrograph; atomic absorption/flame emission spectrophotometer; cathode luminescence microscope; a fully equipped geochemistry laboratory for isotopic work; in-

strumentation for chemical analysis of natural waters; and complete petrographic, paleobiological, and general geology laboratories. Geophysical facilities include resistivity, seismic and magnetic exploration equipment.

The University area contains excellent outcrops and is unusually well situated for field work involving studies in sedimentary petrology, geochemistry, stratigraphy, groundwater geology, soil mineralogy, petroleum geology, midcontinent-type structure, invertebrate paleobiology, and paleoecology.

Courses in geology

Undergraduate credit

GEOL 100. Introductory Geology. (3) I, II, S. The earth's physical, structural, and dynamic features; the most common minerals and rocks; processes affecting the earth. Three hours rec. a week. GEOL-100-0-1914

GEOL 101. Natural Science Colloquium. (2) I, II. Offered by telenet. Topics in natural science chosen to illustrate current research of scientists and methods chosen to study the physical universe. At each offering of this course a syllabus will be available giving the topics to be studied and the details of administration of the course. May be repeated once. Not open to geology majors. GEOL-101-0-1914

GEOL 105. Oceanography. (3) I, II. The oceans: their boundaries, contents, and processes. Three hours rec. a week. GEOL-105-0-1919

GEOL 120. Environmental Geology. (2) I, II, S. Influence of earth processes on human activity and the geological consequences of the use of the environment. Two hours rec. a week. GEOL-120-0-1914

GEOL 130. Elementary Geology Laboratory. (1) I, II, S. Field and laboratory investigation of minerals, rocks; use of maps; environmental studies; erosion, transportation, sedimentation. Two hours lab a week. Pr.: GEOL 100, 105, or 120 or conc. enrollment. GEOL-130-1-1914

GEOL 200. Historical Geology. (4) I, II. Physical and biological events that have occurred on planet earth throughout geologic time. Three hours rec. and three hours lab a week. Pr.: GEOL 100 or 105. GEOL-200-1-1914

GEOL 210. Geology of Planets. (3) I. Application of geochemical and geophysical principles to the evolution of planetary structures. Alternative interpretations of current observations of planet features will be discussed. Three hours rec. a week. Pr.: One of the following: GEOL 100, 105, 120; GEOG 220; PHYS 102, 191. GEOL-210-0-1914

GEOL 310. Topics in Geology. (2) I, II. Seminar discussion of subjects of current interest in geology. Pr.: GEOL 100 or equiv. natural science course. GEOL-310-0-1914

GEOL 399. Honors Seminar in Geology. (1-3) I, II. Selected topics. Open to non-majors in the Honors Program. GEOL-399-0-1914

GEOL 499. Senior Honors Thesis (2) I, II, S. Open only to seniors in the Arts and Sciences honors program. GEOL-499-4-1914

Undergraduate and graduate credit in minor field

GEOL 501. Independent Study in Geology. (1-3) I, II, S. Independent reading; field or laboratory investigations, or both, of geologic problems. Pr.: GEOL 200 and junior standing. GEOL-501-0-1914

GEOL 502. Mineralogy and Petrology I. (4) I. Fundamentals of crystallography and crystal chemistry; physical properties of crystals; descriptive mineralogy and petrology of nonsilicates. Three hours lec. and three hours lab a week. Pr.: GEOL 100 or 105, 130, and CHM 230. GEOL-502-1-5-1914

GEOL 503. Mineralogy and Petrology II. (4) II. Descriptive mineralogy and petrology of the silicates; fundamental geochemistry; microscopic identification of minerals and rocks. Three hours lec. and three hours lab a week. Pr.: GEOL 502. GEOL-503-I-5-1914

GEOL 504. Oil and Gas Exploration and Evaluation Methods. (3) I. Geology of oil and gas accumulation, drilling and testing methods, exploration costs and risks, procedures for securing drilling rights, and appraisal of proved and unproved areas. For non-geology majors only. Pr.: Junior standing or equiv. experience. GEOL-504-0-1914

GEOL 505. Energy from the Earth. (3) On sufficient demand. Geology of energy resources within the earth, including oil, natural gas, coal, oil shale, tar sand, uranium, and geothermal energy, together with a review of reserves and consumption nationwide and worldwide. Three hours rec. a week. Pr.: GEOL 100, 120, or PHYS 102. GEOL-505-0-1914

GEOL 507. Introductory Geochemistry. (3) I. Chemical principles involved in the understanding of geologic processes. Two hours rec. and three hours lab a week. Pr.: GEOL 503 and MATH 221. GEOL-507-1-4-1915

GEOL 512. Earth Science. (3) I, II. A critical study of the atmosphere, weather, climate, composition, and processes of the earth; also, the interaction of these in producing the pattern of landforms and human activity. Three hours rec. a week. Pr.: GEOL 100 or GEOG 220 or junior standing. GEOL-512-1-1917

GEOL 515. Geology of the National Parks. (3) On sufficient demand. Stratigraphy, structure, and geological history that produced the scenery of the national parks. Selected national monuments also will be studied. Pr.: GEOL 100, 105, or 120. GEOL-515-0-1914

GEOL 520. Geomorphology. (4) I, II. Various landforms and their evolution; geologic interpretation of landscapes, especially of features in the United States; interpretation of topographic maps. Three hours rec. and three hours lab a week. Pr.: GEOL 100. GEOL-520-1-1914

GEOL 530. Structural Geology. (4) II. Mechanics of the earth's crust; origin and interrelation of structures of the earth. Three hours rec. and three hours lab a week. Pr.: GEOL 503; GEOL 570 or conc. enrollment. GEOL-530-1-5-1914

GEOL 570. Field Methods in Geology. (2) I, II. Construction of geologic maps; application of field methods to the problems of geology. One hour rec. and three hours lab a week. Pr.: GEOL 200 and 503. GEOL-570-1-1914

GEOL 580. Paleobiology I. (3) I. Biological principles applied to fossils; introduction to the contributions of algae and the lower invertebrate phyla to the fossil record using living and fossil forms. Two hours rec. three hours lab a week. Pr.: GEOL 200 and 503; BIOL 198 or 201; PHYS 214. GEOL-580-1-1918

GEOL 581. Paleobiology II. (3) II. Biological principles applied to fossils; introduction to contributions of higher invertebrate phyla to the fossil record using living and fossil forms. Two hours rec. and three hours lab a week. Pr.: GEOL 580. GEOL-581-1-1918

Undergraduate and graduate credit

GEOL 601. Geologic Presentation. (1) I, II. Application of oral communication techniques to the effective presentation of geologic concepts. One hour rec. a week. Pr.: GEOL 530 and SPCH 105. GEOL-601-0-1914

GEOL 602. Mineral Exploration. (3) I, II. Geological, geochemical, and geophysical prospecting techniques and their application in the exploration for metallic mineral deposits. Three hours rec. a week. Pr.: GEOL 503. GEOL-602-0-1914

GEOL 603. Sedimentary Processes and Systems. (3) I, II. Sedimentary processes and depositional systems and their use in interpreting the sedimentary rock record. Two hours rec. and three hours lab a week. Pr.: GEOL 507 and 581. GEOL-603-1-1914

GEOL 605. Exploration Geophysics. (3) II. Seismic, gravity, magnetic, and electrical methods used in geophysical exploration for petroleum accumulations and for mineral deposits. Three hours rec. a week. Pr.: PHYS 214; GEOL 530. GEOL-605-0-1916

GEOL 640. Petroleum Geology. (3) II. Origin, migration, and accumulation of petroleum; stratigraphy and structure of important fields. Three hours rec. a week. Pr.: GEOL 200. GEOL-640-0-1914

GEOL 702. Economic Geology. (4) II. Geology and origin of metallic mineral deposits and of some non-metallic deposits, including coal. Three hours rec. and three hours lab a week. Pr.: GEOL 507. GEOL-702-1-1914

GEOL 703. Stratigraphic Geology. (4) I, II. Description, classification, and correlation of stratigraphic units, with emphasis on those of Kansas. Three hours rec. and three hours lab a week. Pr.: GEOL 200 and 503. GEOL-703-1-1914

GEOL 704. Paleoecology. (3) I. Application of biological, physical, and chemical factors in modern marine environments to the quantitative study of the structure and dynamics of fossil populations and communities. Two hours rec. and three hours lab a week. Pr.: GEOL 581. GEOL-704-1-1918

GEOL 705. Geobiology. (3) II. Discussion and critique of current and classic research in geobiology. Three hours rec. a week. Pr.: GEOL 581. GEOL-705-0-1918

GEOL 708. Optical Mineralogy-Petrology. (4) I. Identification of minerals and rocks as crushed fragments and in thin sections; petrology of igneous, metamorphic, and sedimentary rocks. Two hours lec. and six hours lab a week. Pr.: GEOL 503. GEOL-708-1-3-1914

GEOL 711. Water Resources Geochemistry. (2) II. Geochemistry of ground and surface waters; emphasis on mineralogic and hydrologic controls on inorganic constituents and properties. Two hours rec. a week and one field trip a semester. Pr.: GEOL 507 or AGRON 705 or 755 or consent of instructor. GEOL-711-0-1915

GEOL 712. Advanced Geochemistry. (4) II. Application of chemical principles to igneous, metamorphic systems; emphasis on equilibria oxidation-reduction, crystal chemistry, and thermodynamics. Three hours lec. and three hours lab a week. Pr.: GEOL 507 and CHM 585. GEOL-712-1-5-1915

GEOL 716. Hydrogeology. (3) I, II. Origin, geologic occurrence, and migration of subsurface water; laws governing ground water flow and yield of aquifers. Three hours rec. a week. Pr.: GEOL 520, 530, or 703, or consent of instructor. GEOL-716-0-1914

GEOL 718. Field Geology. (6) S. Geologic mapping projects along the Colorado Front Range using Brunton compass, aerial photographs, topographic maps, and plane table; special problems in stratigraphy, structure, and petrology. Five six-day weeks in the field. Pr.: GEOL 503 and 530. GEOL-718-2-1914

GEOL 720. Quaternary Geology. (2) II. Quaternary stratigraphy and its development in North America; correlation of European and North American Quaternary rocks and sediments. Two hours rec. a week and one field trip a semester. Pr.: GEOL 703. GEOL-720-0-1914

GEOL 740. Regional Geology. (3) I. Structure and stratigraphy of the major tectonic units of North America. Pr.: GEOL 530, 703. GEOL-740-0-1914

GEOL 770. Subsurface Methods. (3) I, II. Well cuttings, electric logs, and radioactive logs as applied to subsurface mapping of rocks and their fluid content. One hour rec. and six hours lab a week. Pr.: GEOL 703. GEOL-770-1-1914

GEOL 790. Problems in Geology. (Var.) I, II, S. Work is offered in mineralogy, paleobiology, paleoecology, stratigraphy, structural geology, igneous, metamorphic, and sedimentary petrology, geomorphology, planetary geology, hydrogeology, geochemistry, and isotope geology. Pr.: Background of courses needed for problem undertaken. GEOL-790-3-1914

Graduate Credit

GEOL 800. Graduate Seminar in Geology. (Var.) I, II. Topics in geology, geochemistry, and geophysics. GEOL-800-3-1914

GEOL 801. Advanced Paleobiology. (2) On sufficient demand. Detailed study of the functional morphology, ecology, biogeography, evolution, and classification of selected groups. Pr.: GEOL 704 or 705. GEOL-801-0-1918

GEOL 804. Igneous and Metamorphic Petrology. (4) On sufficient demand. Selected problems in the petrogenesis of igneous and metamorphic rocks. Three hours lec. and three hours lab a week. Pr.: GEOL 708. GEOL-804-1-5-1914

GEOL 805. Advanced Igneous and Metamorphic Petrology. (2) On sufficient demand. Field and laboratory study of selected problems in the origin of igneous and metamorphic rocks. Pr.: GEOL 804. GEOL-805-1-5-1914

GEOL 806. Sedimentary Petrology. (4) II. Petrography, classification, and origin of terrigenous and chemical sedimentary rocks. Three hours lec. and three hours lab a week. Pr.: GEOL 708. GEOL-806-1-5-1914

GEOL 807. Advanced Sedimentary Petrology. (2) I, II. Field and laboratory study of selected problems in the origin of sedimentary rocks. Pr.: GEOL 806. GEOL-807-1-5-1914

GEOL 810. Isotope Geology. (3) I. Principles, techniques, and applications of natural radioactive isotopes to geochronology; application of isotopes to problems of petrogenesis. Three hours rec. a week. Pr.: GEOL 708 or consent of instructor. GEOL-810-0-1914

GEOL 830. Geotectonics. (3) I. Origin and history of major tectonic elements of the earth, especially their interaction through time. Pr.: GEOL 530. GEOL-830-0-1914

GEOL 840. Planetology. (3) II. Geologic principles applied to a study of the solar system. Pr.: GEOL 530, 712, or consent of instructor. GEOL-840-0-1914

GEOL 880. Clay Mineralogy. (3) II. Geologic occurrences, physical properties, atomic structures, and the identification of clay minerals, including thermal analytical methods and the study of X-ray diffraction patterns. Two hours rec. and three hours lab a week. Pr.: GEOL 507 or AGRON 515. GEOL-880-1-1914

GEOL 899. Research in Geology, M.S. (Var.) I, II, S. Work is offered in mineralogy, paleobiology, paleoecology, stratigraphy, structural geology, igneous, metamorphic and sedimentary petrology, geomorphology, planetary geology, hydrogeology, geochemistry and isotope geology. Pr.: Registration in Graduate School, with sufficient training to undertake research in specific area. GEOL-899-4-1914

History

Joseph M. Hawes,* head of department

Professors Frey,* Hawes,* Higham,* Jones,* Kaufman,* Kipp,* Kren,* Linder,* Mrozek,* Socolofsky,* and Wilcoxon;* Associate Professors Ferguson,* Feyerharm, Gray,* Hamscher,* McCulloh,* Nieman,* and Page;* Assistant Professors Donovan* and Stoner; Emeriti: Professors Carey,* Sageser;* Associate Professors Alsop,* Crawford,* and Riggs.*

The history program at Kansas State University appeals not only to majors but to all students seeking a rewarding educational experience. The curriculum includes courses in traditional and non-traditional fields of interest taught by a nationally respected faculty willing to try new and innovative teaching techniques. A program of speakers, seminars, colloquia, and films supplements the curriculum to stimulate student interest in the discipline of history and how it is expressed.

Undergraduate advisors in the history department maintain up-to-date information regarding requirements of graduate and professional schools and relevant course offerings in history and other departments.

Transfer students

Normally, the history department will accept transfer credit for history courses taught at accredited institutions of higher education. In the case of students transferring from community colleges, only courses equivalent to those taught at the freshman-sophomore level at Kansas State University (courses numbered HIST 100 through HIST 299) may receive credit for the history major.

Undergraduate study

Requirements for a major in history consist of a minimum of 30 hours in history, including HIST 101, Western Civilization: The Rise of Europe, and HIST 102, Western Civilization: The Modern Era, a minimum of 18 hours in courses numbered 500 and above, and HIST 397 in the junior year. Students must distribute their upper division courses over at least three of the following fields:

Ancient, medieval, and early modern Europe
Modern Europe (including Great Britain)
The third world (Asia, Africa, Latin America)
The United States (including the colonial period)
Topical courses not focusing upon a specific geographical region, such as history of science, technology, dance, sport, military history, psychohistory, and other similar courses.

Advanced program in history

Certain highly qualified students may elect to define their own programs for the major in consultation with a committee of three faculty members chosen by the student and approved by the head. This program of study should be broadly conceived, not narrowly circumscribed. This option is available only to students seeking a bachelor of arts (B.A.) degree in history. In order to enter this program a student must have a grade point average of 3.5 at the end of the freshman year or later, submit two letters of recommendation and a statement of purpose and receive approval from the undergraduate studies committee. A student selecting this option must enroll prior to his senior year and meet the following minimum requirements:

write a senior thesis (six hours credit over one or two semesters);

pass an oral examination over a specific body of historical knowledge, the scope of which will be defined by the student in consultation with the faculty committee;

enroll in 24 hours of history courses including the Junior Seminar to be selected by the student in consultation with the faculty committee. Students are encouraged to supplement regular course offerings with tutorial instruction.

Secondary education certification

Students majoring in history may also prepare for teacher certification at the secondary level. This program leads to the bachelor of science or the bachelor of arts degree in history. The sequence of courses should be planned in cooperation with advisors in both history and education to ensure that the requirements of both programs are met. (See College of Education section for history education requirements.) Students taking this program must include in their 18 hours of upper division courses HIST 599, Senior Seminar for Secondary Teachers.

Graduate study

Graduate study leading to the master of arts and doctor of philosophy degrees is offered in most fields, including the history of science and technology, intellectual history, military history, psychohistory, and economic and agricultural history. General requirements for these degrees are set forth in the Graduate School section of this catalog.

Candidates for the master of arts degree must take a course in historiography. If they write a thesis or report they must offer

two seminars and pass a written or oral final examination. If they take the non-thesis, non-report degree, they must offer three seminars and pass a written final examination.

For the doctor of philosophy degree, candidates must present a general field in European or American history, two special fields in history and an outside minor field. The preliminary examinations are both written and oral. Reading proficiency in two acceptable foreign languages is required.

A detailed description of the graduate programs and information regarding financial support may be obtained by writing the head of the department.

The department cooperates with a number of other departments in the South Asia Program, which is described in detail in the Academic Programs section of this catalog. It also publishes *Military Affairs*, the journal of military, naval and air history, theory and technology.

Facilities for graduate study

The University's Farrell Library has a number of large, specialized collections. In addition, nearby are several excellent research facilities: the Eisenhower Presidential Library, with outstanding holdings relating to the Eisenhower administration and recent military history; the Truman Presidential Library, with valuable collections on the Truman administration, the history of the American presidency and foreign policy; the Linda Hall Library, emphasizing materials pertaining to the history of science; the library of the United States Army Command and General Staff College at Fort Leavenworth; and the regional Federal Records Center at Kansas City, currently rich in military and civil records and eventually to have a microfilm duplication of the main holdings of the National Archives in Washington.

Courses in history

Undergraduate credit

HIST 100. Introduction to History. (3) I, II. What history is, how it is produced and what its functions are. Designed for freshmen who want an introductory course which explains the methodology, purposes and career options of the discipline. HIST-100-0-2205

HIST 101. Western Civilization: The Rise of Europe. (3) I, II, S. Major trends in western history from the beginnings of European civilization to the end of the 17th century. The scope of this course includes classical antiquity, the Middle Ages, the Renaissance, the Reformation, and early modern Europe, but chronological and topical emphases vary with individual sections. Required of all majors in History. Pr.: Not open to juniors and seniors except with consent of instructor. HIST-101-0-2205

HIST 102. Western Civilization: The Modern Era. (3) I, II, S. Principal developments in western civilization from the beginning of the 18th century to the present. The scope of the course includes the Enlightenment, the French Revolution, the Industrial Revolution, nationalism, imperialism, communism, fascism, and the two World Wars, but chronological and topical emphases vary with individual sections. Required of all History majors. Pr.: Not open to juniors and seniors except with consent of instructor. HIST-102-0-2205

HIST 103. Overseas European Studies. (2-3). Intersession only. In alternate years. Selected aspects of European history and culture with readings, lectures, and discussions which will relate historical events to places visited. HIST-103-0-2205

HIST 105. Western Civilization: The Rise of Europe (Honors). (3) I. In alternate years. Course description same as HIST 101. HIST-105-0-2205

HIST 106. Western Civilization: The Modern Era (Honors). (3) II. In alternate years. Course description same as HIST 102. HIST-106-0-2205

HIST 200. Topics in History for Freshmen and Sophomores. (3) In alternate years. Exploration of the historical dimensions of a particular topic or theme. Topics vary. May be repeated once. HIST-200-0-2205

HIST 250. Russian Culture and Civilization. (3) I. In alternate years. Russia's past and present in the light of principle ideologies with emphasis upon fine arts, literature, music, religion, politics, and education. Equal time will be given to the Tsarist and the Soviet period. Knowledge of Russian language is not required. (Same as MLANG 250.) HIST-250-0-2205

HIST 251. History of the United States to 1877. (3). Includes ethnic, social, military, political, economic, diplomatic, and ideological themes. The chronological emphasis varies with instructor. The aim of the course is to achieve a broad understanding of American civilization to 1877. HIST-251-0-2205

HIST 252. History of the United States Since 1877. (3). Ethnic, social, political, economic, and diplomatic history. The goal of the course is to achieve a broad understanding of American civilization since 1877. HIST-252-0-2205

HIST 325. Energy in History. (3) II. In alternate years. A historical examination of sources and uses of energy and their impact on human society. Changes in the kinds of energy people have used and the ways they have used them from prehistoric times through the present. Considers the historical background of current energy-related problems. Pr.: PHYS 101. HIST-325-0-2205

HIST 350. Gandhi and the Indian Revolution. (3) II. In alternate years. An introduction to Mahatma Gandhi, his life and career in India, England, and South Africa, his techniques of non-violent struggle, and the revolution which destroyed the British Empire and created the new countries of India and Pakistan. HIST-350-0-2205

HIST 397. Junior Seminar. (3). Provides for the study of the historical method for students in their junior year. Emphasis upon both research techniques and writing. HIST-397-0-2205

HIST 398. Sophomore Honors Seminar in History. (3). In alternate years. Selected topics in history. May be repeated once for credit. Pr.: Membership in Honors Program or consent of instructor. HIST-398-0-4900

HIST 401. Technology, Science, and History. (3) II. In alternate years. A non-technical historical survey of the more significant interactions of technology and science with life and thought in the western world. HIST-401-0-2205

HIST 448. Naval History. (3) I or II. In alternate years. Ships, technological developments, navies, tactics, warfare, strategy and the interrelationship between naval thinking and national and international politics. HIST-448-0-2205

HIST 449. Introduction to the History of Aviation. (3). In alternate years. The development of aviation since the Wrights, providing a world view of man's conquest of the air in both human and technological terms including the development of military, commercial, and general aviation. HIST-449-0-2205

HIST 459. History of Dance in its Cultural Setting. (3) II. In alternate years. The study of developments and changes in the style, technique and purpose of ceremonial and theatrical dancing from the Greeks to the present. Emphasis on the interaction between this art and the total culture—social, religious, artistic, and political—in which it is performed. Pr.: Sophomore standing. Same as DANCE 459. HIST-459-0-2205

HIST 460. Dance Styles and Personalities. (3). On sufficient demand. Brief overview of dance, primitive to the Renaissance. Primary focus is on the contributions of persons and styles to the development of the dance, ballet de cour to contemporary trends. Same as DANCE 460. HIST-460-0-2205

HIST 498. Senior Thesis. (3-6) I, II, S. May be repeated once to a maximum of six hours credit. Pr.: Senior standing. HIST-498-0-2205

HIST 499. Senior Honors Thesis in History. (2) I, II, S. Open only to seniors in the Arts and Sciences Honors Program. HIST-499-4-2205

Undergraduate and graduate credit in minor field

HIST 501. Heritage of the Western World. (3) I, II. In alternate years. The heritage and legacies of western civilization, designed for the non-major. Emphasizes broad themes in the evolution of the political, economic, social, cultural, and ideological inheritance. Not for major credit. Pr.: Sophomore standing. HIST-501-0-2205

HIST 503. Overseas European Studies. (2-3). Intersession only. In alternate years. Selected aspects of European history and culture with reading, lectures and discussions which will relate historical events to the places visited. Pr.: Sophomore standing. HIST-503-0-2205

HIST 504. History of Hinduism. (3) I. In alternate years. Examines one of the world's oldest religions from its origins to the present. Covers the fundamental ideas and practices of Hinduism and the development of related religions such as Buddhism, Jainism and Sikhism. Pr.: Sophomore standing. HIST-504-0-2205

HIST 505. Introduction to the Civilization of South Asia I. (3). In alternate years. Interdisciplinary survey of the development of civilization in South Asia, including consideration of the geographical and demographic context, philosophical and social concepts, social and political institutions, literature and historical movements. (Same as GEOG 505, ECON 505, POLSC 505, SOCIO 505, ANTH 505.) HIST-505-0-2205

HIST 506. Introduction to the Civilization of South Asia II. (3). In alternate years. Interdisciplinary survey of recent and contemporary civilization in India, Pakistan, Ceylon, Nepal, and Afghanistan, including recent history, current economy, religion, culture, language and literature, geography, social and political structure and ideas. (Same as GEOG 506, ECON 506, POLSC 506, SOCIO 506, ANTH 506.) HIST-506-0-2205

HIST 509. History of Childhood. (3). In alternate years. Examines some theoretical positions on childhood (Freud, Erikson, DeMause, Rheingold, and others), and then attempts to determine what it meant to be a child at various times in the past, from Greek and Roman antiquity to 20th century Europe and America. Concentrates on such questions as infanticide, child beating, toilet training, swaddling, and methods of schooling, as well as the impact of religious and secular ideologies on the theory and practice of child-rearing. Pr.: Sophomore standing. HIST-509-0-2205

HIST 510. History of Marxism: Theory and Praxis. (3) II. In alternate years. Analysis of the origins of Marxism, stressing the impact of German idealism, French radicalism, utopian socialism, and British industrialization. Development of Marx's thought from the *Philosophical Manuscripts* to *Kapital.* Second half of the course concerns the organization of Marxist parties and movements from the Second International to polycentrism. The course will treat the Marxist-humanist response to Stalinism. Pr.: Sophomore standing. HIST-510-0-2205

HIST 512. Women in European History. (3) II. In alternate years. A study of women in primitive European societies, in preindustrial times, and in the industrial era. Emphasis will be upon the position and role of women within the society. Pr.: Sophomore standing. HIST-512-0-2205

HIST 513. Battles and Leaders. (3) I. In alternate years. The course will emphasize military organization, tactics and strategy, generalship and grand strategy, manpower and logistics, and the wartime ramifications of war on land, at sea, and in the air. Pr.: Sophomore standing. HIST-513-0-2205

HIST 514. World War II. (3) I. In alternate years. Origins, conduct and consequence of World War II. Films from the TV series, **The World at War**, form an integral part of the course. Pr.: Sophomore standing. HIST-514-0-2205

HIST 515. History of Sport. (3). In alternate years. The historical development of sport (especially in Europe and North America) including the growth of competition, the rise of mass spectator sports, elitism and the changing function of sport. History of sport as business and history of the relationship between sport and other institutions. (Same as PE 515.) Pr.: Sophomore standing. HIST-515-0-2205

HIST 516. History of Science I. (3) I. In alternate years. Scientific activity and thought from antiquity to the end of the 16th century, with emphasis on Greek, late medieval and Renaissance science. No background in science required. Pr.: Sophomore standing. HIST-516-0-2205

HIST 517. History of Science II. (3) II. In alternate years. Science in the 17th and 18th centuries, with emphasis on Galileo, Newton, philosophies of science, scientific societies, and developments in the physical, biological and earth sciences, including the relations of science with technology, medicine, religion, exploration and the Enlightenment. No background in science required. Pr.: Sophomore standing. HIST-517-0-2205

HIST 518. Science in the Modern Age. (3) I. In alternate years. Science since the 18th century, including major developments in the physical, biological and earth sciences, and the relations of science to scientific societies, technology, medicine, exploration, religion and archaeology. No background in science required. Pr.: Sophomore standing. HIST-518-0-2205

HIST 519. Science in America. (3) I. In alternate years. A survey of American science from the colonial era to the present, with special attention to the historical context and the role of institutions and government. Some attention to the social problems faced by scientists and their responses to them. Pr.: Sophomore standing. HIST-519-0-2205

HIST 520. Death and Dying in History. (3) I, II. In alternate years. Examines European and American attitudes toward death and dying in various historical periods. Topics include: death and dying in the European Middle Ages and in 19th- and 20th-century America, the impact of the Nazi Holocaust on modern opinions about death, suicide as an historical problem, the fear of cancer in modern times, and others. Pr.: Sophomore standing. HIST-520-0-2205

HIST 521. History of Christianity. (3) I. In alternate years. A history of the Christian religion from the era of Jesus Christ to the present with special emphasis on people and ideas. Pr.: Sophomore standing. HIST-521-0-2205

HIST 522. Religion in American History. (3) II. In alternate years. A study of the impact of religion on American culture and of American culture on religion, the Social Gospel and related issues, and the interrelationship of Christianity and politics. Pr.: Sophomore standing. HIST-522-0-2205

HIST 523. A History of the Occult and Witchcraft. (3). In alternate years. A study of the history of the occult and witchcraft in western civilization with special attention to religious, intellectual and social issues and influences. Pr.: Sophomore standing. HIST-523-0-2205

HIST 525. Colonial America. (3). In alternate years. About 1450 to 1763. Includes the European background of North American colonization, the rivalry for new world empire, 17th century English colonial foundations, and development of the various colonial societies. Pr.: Sophomore standing. HIST-525-0-2205

HIST 526. The American Revolution. (3). In alternate years. Eighteenth century colonial background of the Revolution and the revolutionary era itself, 1763-1789. Stresses ideological and other causes of the Revolution, the course of the war, its social results, the Confederation and its demise. Pr.: Sophomore standing. HIST-526-0-2205

HIST 527. The Early National Period. (3). In alternate years. Foundations of the new nation from the adoption of the Constitution to the conclusion of the War of 1812, approximately 1789-1815. Stresses the contest between Hamiltonians and Jeffersonians for philosophical dominance of institutions; other topics include diplomacy, westward expansion, military developments, the social and intellectual life of the era. Pr.: Sophomore standing. HIST-527-0-2205

HIST 528. The Age of Jackson. (3). In alternate years. 1815-1848. Political party instability in the aftermath of the War of 1812, emergence of modern political parties in the 1830s and 1840s, the transportation revolution and growth of societal interdependence, the nature of antebellum reform. Emphasis is on the problem of social order and the relation of the individual to society in a period of rapid and fundamental change. Pr.: Sophomore standing. HIST-528-0-2205

HIST 529. Civil War and Reconstruction. (3) I. In alternate years. 1848-1877. Examination of the sectional controversy, the failure of the political system to resolve peacefully the conflict between North and South, the resort to arms, the nature of the post-war settlement. Emphasis is on the attempt of mid-19th-century American leaders to deal with the complex problems of slavery and race. Pr.: Sophomore standing. HIST-529-0-2205

HIST 530. Populism and the Progressive Movement. (3). In alternate years. "The Gilded Age," "Populism," and "The Progressive Movement" as significant developments in the American scene, 1877-1914, provide the emphasis for this course. An understanding of the nature of American life, with concentration on activities of "typical" Americans, is a major goal of this course. Pr.: Sophomore standing. HIST-530-0-2205

HIST 531. The United States in the Twentieth Century. (3). In alternate years. 1917 to the present. Efforts are made to deal with ethnic, cultural and social as well as political, economic and diplomatic themes. Pr.: Sophomore standing. HIST-531-0-2205

HIST 533. Topics in the History of the Americas. (3). In alternate years. Provides instructor and students the opportunity to investigate in detail a particular theme, event, or problem in the history of North, Central, or South America. Topics vary. May be repeated for credit. Pr.: Sophomore standing. HIST-533-0-2205

HIST 535. History of the South. (3). In alternate years. Survey of southern history from the colonial period to the present. Origins and growth of slavery and the plantation system, the nature of society in the slave South, the impact of the Civil War and emancipation on southern society, the emergence of the "New South" in the late 19th and early 20th centuries. Pr.: Sophomore standing. HIST-535-0-2205

HIST 536. The American West. (3) I. In alternate years. Primary emphasis on the 19th century when Americans were rapidly spreading across the continent. Also examines the earlier developments of the frontier and considers the 20th century role of the trans-Mississippi. Pr.: Sophomore standing. HIST-536-0-2205

HIST 537. History of the Indians of North America. (3). In alternate years. A discussion of Indian-White relations from 1492 to the present. Special emphasis given to federal government policy and the cultural decline of the native people of North America. Also includes an examination of Indian reservations and urban Indians. HIST-537-0-2205

HIST 538. The Great Plains. (3) II. In alternate years. Through concentration on the one-fifth of North America identified as the Great Plains, an effort is made to present the development of that region in historic times. Pr.: Sophomore standing. HIST-538-0-2205

HIST 539. Black American History. (3). In alternate years. Blacks in America from the 17th century to the present, with special emphasis on political, social, economic, and intellectual developments in the role of the Black American and his contributions to American life and culture. Pr.: Sophomore standing. HIST-539-0-2205

HIST 540. Growing up in America. (3) II. In alternate years. A survey of American child-rearing practices, attitudes towards children, children's social roles, and institutions for children from about 1700 to the present. Pr.: Sophomore standing. HIST-540-0-2205

HIST 541. Women in American History. (3). In alternate years. An overview of women in the history of the United States, emphasizing both important individual women and the changing position of women in American society. Pr.: Sophomore standing. HIST-541-0-2205

HIST 542. History of the American Family. (3) II. In alternate years. Changes within the American family and between the family and society from the 17th century to the present, including sex roles, child rearing practices, family structure, and regional and ethnic variations in the family. Pr.: Sophomore standing. HIST-542-0-2205

HIST 543. The United States and World Affairs, 1776-Present. (3) I. In alternate years. History of U.S. foreign policy since 1776. Stresses the continuity and intellectual foundations of foreign policy. Emphasizes territorial and foreign commercial expansion and American's response to war and revolution in the 20th century. Pr.: Sophomore standing. HIST-543-0-2205

HIST 544. History of U.S.-Soviet Relations Since 1917. (3) II. In alternate years. History of U.S.-Soviet relations since 1917 with emphasis on WWI and the New Diplomacy; from Non-Recognition to Recognition, 1921-1933; the Grand Alliance and WWII; origins of the Cold War; economic and atomic diplomacy; the Cuban Missile Crisis; and prospects for detente. Pr.: Sophomore standing. HIST-544-0-2205

HIST 545. War in the Twentieth Century. (3). In alternate years. Considers the military theory and practice, the technology, and the political and ideological constraints of World Wars I and II, the Spanish Civil War, the Korean War and the Indochinese wars. Students are to gain an understanding of the varieties of military experience in the 20th century, including civil wars, "total war," and guerrilla warfare. Pr.: Sophomore standing. HIST-545-0-2205

HIST 546. History of American Military Affairs. (3). In alternate years. Deals with the development of military institutions in colonial America and the United States, civil-military relations and conflicts between political constraints and strategic demands, popular attitudes toward the military, and the rise of the military-industrial complex. Pr.: Sophomore standing. HIST-546-0-2205

HIST 548. American Business History. (3). In alternate years. The rise and development of the major commercial, financial, industrial, and transportation enterprises in the United States from the colonial period to the present. Emphasizes the gradual specialization of business through the Civil War, the movement from specialization to combination and integration along vertical/horizontal lines, the conglomerate movement and the development of multinational enterprises after World War II. Pr.: Sophomore standing. HIST-548-0-2205

HIST 550. American Economic History. (3). In alternate years. Development of the American economy from colonial times to the present including colonial agriculture and mercantilism, the emergence of the factory system, industrial capitalism, large scale business and agricultural enterprises, classical and Keynesian economics. Pr.: Sophomore standing. HIST-550-0-2205

HIST 551. American Urban History. (3) II. In alternate years. The role of the city in American history, emphasizing the process of urbanization. Pr.: Sophomore standing. HIST-551-0-2205

HIST 552. American Social History. (3). In alternate years. Evolution and development of American social institutions, including marriage, sexual customs, ethnicity and community problems. Also emphasizes the different methodologies used in writing social history. Pr.: Sophomore standing. HIST-552-0-2205

HIST 553. History of American Culture. (3) II. In alternate years. Main emphasis is on political, religious and social thought and ideology, 1620 to present. Pr.: Sophomore standing. HIST-553-0-2205

HIST 554. American Labor History. (3). In alternate years. Labor as an institutional development (organized labor) and as a general theme in American history. Emphasis on the period after 1877 with focus on contemporary issues. Pr.: Sophomore standing. HIST-554-0-2205

HIST 555. American Constitutional History. (3) II. In alternate years. Survey of constitutional and legal development from colonial times to the present. English constitutional ideas and the common law in the American colonies, formation of the Constitution, the role of the Supreme Court, development of the modern American legal system, growth of the legal profession, the problem of civil liberties. The course is designed to offer insight into the relationship of constitutional-legal institutions to American society. Pr.: Sophomore standing. HIST-555-0-2205

HIST 557. History of American Agriculture. (3). In alternate years. Concentrates on the period since 1850 in an attempt to acquaint the student with the political and economic history of American agriculture. No attempt will be made to present the scientific or technological side of agriculture in detail, but agriculture will be shown in relation to the life of the entire United States. The life of the farmer and his family, the relationship between agricultural changes and other parts of the economy will be part of this course. Special attention will be paid to agriculture in Kansas and the Great Plains. Pr.: Sophomore standing. HIST-557-0-2205

HIST 558. History of Kansas. (3) I, II. Land, people, and cultural developments in Kansas, from the earliest written records to the present. Designed to provide the student with an intimate understanding of the state of Kansas. Pr.: Sophomore standing. HIST-558-0-2205

HIST 560. Latin American Nations. (3). In alternate years. Survey of economic, social, and political developments of the Latin American nations from independence to the present decade with emphasis on Argentina, Brazil, Peru, Chile, and Mexico. Stresses reform and revolution of the last fifty years. Pr.: Sophomore standing. HIST-560-0-2205

HIST 561. Colonial Hispanic America. (3). In alternate years. Iberian and indigenous American background, exploration, conquest, settlement, and development of Latin America. Stresses growth of mestizo culture, colonial styles of living, and wars of independence. Pr.: Sophomore standing. HIST-561-0-2205

HIST 562. Modern Mexico. (3). In alternate years. Brief survey of lines of national development, 1821-1910, and major emphasis on the 20th-century Revolution and its reforms (1910-1940) as well as its subsequent implications. Pr.: Sophomore standing. HIST-562-0-2205

HIST 563. Topics in Comparative History. (3). In alternate years. Investigation in detail of a particular theme, event or problem in comparative history. Topics vary. May be repeated once for credit. Pr.: Sophomore standing. HIST-563-0-2205

HIST 564. The Russian Revolutions and the Soviet System. (3). In alternate years. Russia's industrial revolution and its deepening crisis to the present. Emphasis on prospects for constitutional monarchy and a liberal parliamentary order from the Revolution of 1905 to 1914, World War I and the February Revolution, Social Democracy and the roots of Leninism, Bolshevizing Soviet society under War Communism and the NEP, Stalinism: fulfillment or betrayal of Leninism, the Great Patriotic War and the emergence of the Soviet Empire, and Destalinization: prospects for the Soviet system. Pr.: Junior standing. HIST-564-0-2205

HIST 565. History and Culture of Greece. (3). In alternate years. The rise of civilization in the ancient Near East, the migrations of the Greeks and the Heroic Age, the Greek city-states, commerce and colonization, the Persian invasion, Athens' leadership of Greece, the war between Athens and Sparta, Alexander the Great, and the total Hellenic achievement. Pr.: Sophomore standing. HIST-565-0-2205

HIST 566. History and Culture of Rome. (3). In alternate years. Examines the various theories of Rome's origin, the causes, problems, and influences upon the republican government, political and economic problems of Roman expansion and the Roman world. Various reforms including those of the Gracchi, Caesar, and Augustus. Contact with Greece and the older areas of civilization. The Roman imperial system, the many causes of Rome's fall, and Rome's role as a synthesizer of the ancient classical culture. Pr.: Sophomore standing. HIST-566-0-2205

HIST 567. Europe in the Middle Ages. (3). In alternate years. Europe from the fall of the Roman Empire to the 13th century. Investigates the conflict and interaction of Roman, Christian and Germanic ideals and attitudes in the early Middle Ages, and the increasing complexity and sophistication of society, culture, religion and government of the high Middle Ages. Pr.: Sophomore standing. HIST-567-0-2205

HIST 568. The Renaissance. (3). In alternate years. The Italian Renaissance as a major phase in the history of western civilization and its spread to Northern Europe. Pr.: Sophomore standing. HIST-568-0-2205

HIST 569. The Reformation. (3). In alternate years. A study of the Protestant, Catholic, and Radical Reformations with special attention to Luther, Calvin, the origins of the Church of England and the Presbyterian Church, the Anabaptists, the Puritans, and Roman Catholic Reform, and the impact of religious developments on the political, economic, social, and intellectual history of the Western World. Covers the period from approximately 1500 to 1660. Pr.: Sophomore standing. HIST-569-0-2205

HIST 570. Europe in the Seventeenth Century. (3) I. In alternate years. Surveys the economic, social, political and intellectual history of Western Europe in the 17th century, a period marked by economic depression, international conflict and domestic revolutions as well as by cultural achievement. Emphasizes the complex interaction among social groups; the rise of a European state system; the development of constitutional monarchy in England and absolute monarchy in France; and the change in values generated by the Scientific Revolution. Pr.: Sophomore standing. HIST-570-0-2205

HIST 571. Revolutionary Europe. (3). In alternate years. Europe from the death of Louis XIV in 1715 to the fall of Napoleon in 1815. The origins and development of the French Revolution and the Napoleonic legacy, also examines reform and counter-revolutionary movements in England, Italy, Russia, Poland, and the Germanies. Pr.: Sophomore standing. HIST-571-0-2205

HIST 572. Nineteenth-Century Europe. (3). In alternate years. The history of Europe from the French Revolution to the end of the first World War. Major topics covered will include the rise of conservatism as an ideology and its application in practice, the nature of liberalism and socialism, the impact of science and technology, the origins and course of World War I. Pr.: Sophomore standing. HIST-572-0-2205

HIST 573. Twentieth-Century Europe. (3). In alternate years. Examines the political, social, and intellectual developments of Europe in the period of the two World Wars. Emphasis on the failure of democracy and the rise of competing anti-democratic and non-democratic mass movements and ideologies. The course will also deal with the attempted system of collective security, its failure, and the origins and course of World War II. Pr.: Sophomore standing. HIST-573-0-2205

HIST 574. Europe since World War II. (3). In alternate years. Post-war European society, politics, economy, and culture. The effects of total war on the population; restoration and reconstruction. The influence of the U.S. and U.S.S.R. on Europe. Capitalism, socialism, and communism in technological society. European unity movements and their conflicts with traditional values. HIST-574-0-2205

HIST 576. European Diplomatic History to Napoleon. (3) I. In alternate years. The nature, evolution, and functions of the European diplomatic system from 1500 to 1815. Includes a study of the personality and roles of prominent rulers, spies, and diplomats. Analyzes the Greek and Roman diplomatic tradition, international relations during the Middle Ages, the Venetian system, the struggle for European hegemony, the emergence of the Great Powers, the French Revolution, and the Napoleonic empire. Discusses the use of major diplomatic archives and the interpretation of ambassadorial instructions and reports. Pr.: Sophomore standing. HIST-576-0-2205

HIST 577. European Diplomatic History Since Napoleon. (3) II. In alternate years. The nature, evolution, and functions of the European diplomatic system from 1815 to the present. Focuses on the Vienna settlement, diplomacy of Bismarck, international developments between the two World Wars, and the Cold War. Pr.: Sophomore standing. HIST-577-0-2205

HIST 578. Emperors and Peoples: the House of Hapsburg. (3). In alternate years. The diplomatic, military, political, economic, and social aspects of the Hapsburg empire in Central Europe, the Iberian Peninsula, Italy, and the Netherlands from its foundation to its dissolution in the 20th century. Pr.: Sophomore standing. HIST-578-0-2205

HIST 579. England to 1603. (3). In alternate years. English medieval institutions with some regard to their interrelation when possible. Approached through selected topics including Anglo-Saxon society as a folk culture, Anglo-Norman military customs, English monastic and mystical life, the origins of Parliament, the Reformation, etc. Pr.: Sophomore standing. HIST-579-0-2205

HIST 580. England Since 1603. (3). In alternate years. English society and politics in modern times. Emphasis on topics such as the three orders of society (king, lords and commons), the English church, the rise of the House of Commons, the extension of the vote and relations with Scotland and Ireland. Pr.: Sophomore standing. HIST-580-0-2205

HIST 581. Topics in British History. (3). In alternate years. Provides instructor and students the opportunity to investigate in detail a particular theme, event or problem in British history. Topics vary. May be repeated for credit. Pr.: Sophomore standing. HIST-581-0-2205

HIST 582. Modern Eastern Europe. (3). In alternate years. Eastern Europe as an ethnically diverse region located between the Germanic lands and Russia emphasizing the impact of both external and internal forces upon the political, socio-economic, and intellectual development of the various nations. Covers the period from the triumph of the three eastern monarchies over Poland to the Brezhnev Doctrine and Ostpolitik, including the growth of national consciousness and the continuing struggle for political independence. Pr.: Junior standing. HIST-582-0-2205

HIST 583. History of France, 1400-1715. (3). In alternate years. France from the conclusion of the Hundred Years War to the death of Louis XIV. French economy, society and royal administration, and the changes generated in these areas by significant events: the Reformation and the Wars of Religion; the rise of France to world power; peasant uprisings and constitutional crisis; and the reforms of Richelieu, Colbert and Louis XIV. Trends in art, architecture, and philosophy. Pr.: Sophomore standing. HIST-583-0-2205

HIST 584. History of France since 1715. (3). In alternate years. France from the death of Louis XIV to the present. The impact of the French Revolution and the Napoleonic system on the agrarian economy and aristocratic society of the 18th century; the evolution of liberalism, socialism, and colonialism; the development of parliamentary democracy and the impact of the Industrial Revolution; the French response to the devastation of World War I, the humiliation of World War II and the colonial wars of the De Gaulle era. Pr.: Sophomore standing. HIST-584-0-2205

HIST 585. Topics in French History. (3). In alternate years. Provides instructor and students the opportunity to investigate in detail a particular theme, event or problem in French history. Topics vary. May be repeated for credit. Pr.: Sophomore standing. HIST-585-0-2205

HIST 587. Modern Germany, 1789-1914. (3). In alternate years. Central Europe in the French Revolutionary era, the revolutions of 1848, German unification, imperial Germany, emphasizing social changes, especially the transition from agrarian to industrial society. Pr.: Sophomore standing. HIST-587-0-2205

HIST 588. Modern Germany, 1914-1945. (3). In alternate years. Examines the political, social, economic, and intellectual developments in Germany from World War I to the end of World War II. The establishment of the Weimar republic, the nature of its democratic system, the flourishing of cultural activities and the attack on democratic theory and practice leading to the establishment of a totalitarian dictatorship. National Socialism and its leader and alternative interpretations of National Socialism. Pr.: Sophomore standing. HIST-588-0-2205

HIST 589. Topics in German History. (3). In alternate years. Provides instructor and students the opportunity to investigate in detail a particular theme, event or problem in German history. Topics vary. May be repeated for credit. Pr.: Sophomore standing. HIST-589-0-2205

HIST 590. History Through Film. (3) I. In alternate years. A study of full-length, major production films to show how films can enhance, distort, or obscure our understanding of the past. Emphasizes historical development, using motion pictures as social documents. HIST-590-0-2205

HIST 591. History of Russia to 1801. (3). In alternate years. Medieval and early modern Russia with emphasis on the culture of Kievan Rus', the Mongol Yoke, the rise of Moscow, and the emergence of imperial Russia. Emphasizes those trends that contributed to the character of modern Russian society including Orthodoxy, autocracy, serfdom, and westernization. Pr.: Junior standing or consent of instructor. HIST-591-0-2205

HIST 592. Grandeur and Decline of Imperial Russia. (3). In alternate years. Russia in the 19th century with emphasis on the political, economic, social, and intellectual development of tsarist society. Topics of special concern: origins of the intelligentsia, plans for political reform under absolutism, serfdom and economic development, the legacy of the Great Reforms and counter reforms, origins and evolution of revolutionary populism. Pr.: Junior standing or consent of instructor. HIST-592-0-2205

HIST 593. Topics in Russian History. (3). In alternate years. Provides instructor and students the opportunity to investigate in detail a particular theme, event, or problem in Russian history. Topics vary. May be repeated for credit. Pr.: Sophomore standing. HIST-593-0-2205

HIST 594. History of Geology. (3) I. In alternate years. Important trends and individuals in geology from the 17th century to the present, with emphasis on the 19th century. Substantial use will be made of primary sources. Pr.: Sophomore standing. HIST-594-0-2205

HIST 595. Modern European Culture. (3). In alternate years. Major developments in European thought in the nineteenth and twentieth centuries, concentrating on the origin and development of major ideologies. Topics include: Romanticism, Liberalism, Socialism, Fascism, Existentialism, and the revolution in science. Pr.: Sophomore standing. HIST-595-0-2205

HIST 596. Holocaust: The Destruction of the European Jews. (3) I. In alternate years. Analysis of the attempts by the National Socialist government of Germany to exterminate the Jewish population of Europe. Major issues discussed will include: nineteenth-century anti-democratic and anti-semitic movements; Hitler's concept of anti-semitism and personal sources of Hitler's genocidal policy; evolution of the genocidal policy and its implementation; Jewish resistance and collaboration; long-range consequences of the Holocaust. Pr.: Sophomore standing. HIST-596-0-2205

HIST 597. Topics in European History. (3). In alternate years. Provides instructor and students the opportunity to investigate in detail a particular theme, event, or problem in European history. Topics vary. May be repeated for credit. Pr.: Sophomore standing. HIST-597-0-2205

HIST 598. Topics in Non-Western History. (3). On sufficient demand. Provides instructor and students the opportunity to investigate in detail a particular theme, event, or problem in non-western history. Topics vary. May be repeated for credit. Pr.: Sophomore standing. HIST-598-0-2205

HIST 599. Senior Seminar for Secondary Teachers. (3) II. Analysis of the historical content of teaching materials currently in use at the secondary level in public schools to determine the historical validity of the materials. Pr.: Sophomore standing. HIST-599-0-2205

Undergraduate and graduate credit

HIST 617. Theories and Methods of Psychohistory. (3) I. In alternate years. The origin of psychohistory in works by Freud and Neo-Freudians such as Erikson and Lifton, the emerging methods and theories in such areas as psychobiography, history of childhood, large group processes and the attempts to construct philosophical and ideological systems out of the combination of history and psychology. (Same as PSYCH 617.) Pr.: Junior standing. HIST-617-0-2205

HIST 650. Internship in History. (3) I, II, S. Practical professional experience involving at least three weeks in an archive, museum, historical library, or business. Student projects must be approved in advance and a report submitted at the end of the work period. May be repeated once for credit. Pr.: Junior standing. HIST-650-0-2205

HIST 655. Medieval Religion and Politics. (3). In alternate years. The interrelationship of religion and politics from the late Roman Empire to the Conciliar Epoch. Christianity in the Roman Empire and the barbarian kingdoms, the development of royal theocracy, the rise of the papacy, the conflict of church and state, the secularization of government, the Avignon papacy, the Great Schism and conciliarism. Pr.: Sophomore standing. HIST-655-0-2205

HIST 703. Overseas European Studies. (2-3). Intersession only. In alternate years. Short-term, intensive, and in-depth study of various aspects of European History and culture with readings, lectures, discussions, and on-the-spot experiences which will relate historical events to the places visited. Pr.: Senior or graduate standing. HIST-703-0-2205

HIST 713. Psychoanalytic Theory for Psychohistorians. (2). In alternate years. A systematized presentation of a general psychoanalytic developmental psychology. Provides a brief review of historical developments in psychoanalysis as well as introduction to its basic concepts. Taught at the Menninger Foundation in Topeka. Pr.: HIST 617 or PSYCH 617, or conc. enrollment and graduate standing in Psychohistory program. HIST-713-0-2205

HIST 798. Readings in History. (1-3). Students will read on a central theme, attend weekly discussions, and write a final report. HIST-798-3-2205

HIST 799. Problems in History. (Var.). Intensive study of a particular phase of history. Students will attend weekly discussions and write a major research paper on their findings. HIST-799-3-2205

Graduate credit

HIST 801. Historiography. (3-4). Main currents in historical research, the writing of history, and the influence of the great historians from Herodotus to the present. Required of all graduate students in history. HIST-801-0-2205

HIST 899. Research in History, M.A. (Var.). HIST-899-4-2205

HIST 901. Advanced Historiography. (1-4). Advanced work offered on demand and by arrangement, in main currents in historical research, the writing of history, and the influence of great historians. HIST-901-4-2205

HIST 919. Seminar in History of Christianity. (3). HIST-919-0-2205
HIST 920. Seminar in American Social History. (3). HIST-920-0-2205
HIST 921. Seminar in Latin American History. (3). HIST-921-0-2205
HIST 922. Seminar in American Diplomatic History. (3). HIST-922-0-2205
HIST 923. Seminar in the History of the American West. (3). HIST-923-0-2205
HIST 924. Seminar in Colonial America. (3). HIST-924-0-2205
HIST 926. Seminar in American Economic History. (3). HIST-926-0-2205
HIST 927. Seminar in American Science and Technology. (3). HIST-927-0-2205
HIST 928. Seminar in American History. (3). HIST-928-0-2205
HIST 930. Seminar in Modern European History. (3). HIST-930-0-2205
HIST 931. Seminar in German History. (3). HIST-931-0-2205
HIST 932. Seminar in French History. (3). HIST-932-0-2205
HIST 933. Seminar in European Diplomatic History. (3). HIST-933-0-2205
HIST 935. Seminar in Modern Russian History. (3). HIST-935-0-2205
HIST 936. Seminar in Renaissance and Reformation. (3). HIST-936-0-2205
HIST 937. Seminar in British History. (3). HIST-937-0-2205
HIST 940. Seminar in Military History. (3). HIST-940-0-2205
HIST 950. Seminar in South Asian History. (3). HIST-950-0-2205
HIST 968. Seminar in Psychohistory. (3). In alternate years. Directed research and readings in psychohistorical literature. Pr.: Graduate standing. HIST-968-0-2205
HIST 979. Seminar in the History of Science. (3). HIST-979-0-2205
HIST 980. Topics in European History. (1-3). HIST-980-0-2205
HIST 981. Topics in Third World History. (1-3). HIST-981-0-2205
HIST 982. Topics in the History of Science. (1-3). HIST-982-0-2205
HIST 983. Topics in Military History. (1-3). HIST-983-0-2205
HIST 984. Topics in American History. (1-3). HIST-984-0-2205
HIST 985. Readings in History. (1-3). HIST-985-3-2205
HIST 986. Problems in History. (1-3). HIST-986-3-2205
HIST 999. Research in History, Ph.D. (Var.). HIST-999-4-2205

Intercollegiate Athletics

Dick Towers, head of department and athletic director

Coaches Currie, Dickey, Hartman, B. Hickey, L. Hickey, Levin, Miller, Nelson, Riederer, Wauthier, and Webb; Assistant Coaches Anthony, Bocchi, Boyce, Kraft, Latimore, Long, Mayson, McGinnes, McGuire, McVay, Samuelson, Taylor, and Winston; Sports Information Director Scott; Assistant Director Bouma; Trainers Cramer, Fijalkowski, Rudd, and Zickler; Administrative Staff Adolph, Colbert, Epps, Frank, Kadlec, and Rassette.

Kansas State University is a member of the Big Eight Conference and through that affiliation competes with the University of Colorado, Iowa State University, the University of Kansas, the University of Nebraska, the University of Missouri, the University of Oklahoma, and Oklahoma State University.

Intercollegiate competition is open to all students and is coached by staff members who are specialists in their fields.

The men's intercollegiate program competes in football, basketball, baseball, track (indoor and outdoor) and cross country, tennis, and golf. The women's program offers competition in cross country, volleyball, basketball, track and field, softball, tennis, and golf.

Courses

ATHM 101. Varsity Baseball. (1) I, II. Pr.: Consent of instructor. ATHM-101-5-0899
ATHM 102. Varsity Basketball. (1) I, II. Pr.: Consent of instructor. ATHM-102-5-0899
ATHM 103. Varsity Cross Country. (1) I, II. Pr.: Consent of instructor. ATHM-103-5-0899
ATHM 104. Varsity Football. (1) I, II. Pr.: Consent of instructor. ATHM-104-5-0899
ATHM 105. Varsity Golf. (1) I, II. Pr.: Consent of instructor. ATHM-105-5-0899
ATHM 106. Varsity Tennis. (1) I, II. Pr.: Consent of instructor. ATHM-106-5-0899
ATHM 107. Varsity Track—Indoor. (1) I, II. Pr.: Consent of instructor. ATHM-107-5-0899
ATHM 108. Varsity Track—Outdoor. (1) I, II. Pr.: Consent of instructor. ATHM-108-5-0899
ATHW 150. Intercollegiate Basketball. (1) I, II. Pr.: Consent of instructor. ATHW-150-5-0899
ATHW 152. Intercollegiate Track. (1) I, II. Pr.: Consent of instructor. ATHW-152-5-0899
ATHW 154. Intercollegiate Tennis. (1) II. Pr.: Consent of instructor. ATHW-154-5-0899
ATHW 155. Intercollegiate Volleyball. (1) I. Pr.: Consent of instructor. ATHW-155-5-0899
ATHW 156. Intercollegiate Softball. (1) II. Pr.: Consent of instructor. ATHW-156-5-0899
ATHW 157. Intercollegiate Golf. (1) I, II. Pr.: Consent of instructor. ATHW-157-5-0899

Journalism and Mass Communications

Harry Marsh, head of department

Professor Marsh; Associate Professors Adams, Applegate, Bontrager,* Brown, Holt, MacFarland,* Milbourn, Morris,* Oukrop,* and Prince;* Assistant Professors Buller, Daly, Deitch, and Nevious.

The Department of Journalism and Mass Communications is one of 83 schools and departments in the United States with sequences accredited by the American Council on Education for Journalism and Mass Communications and is a member of the American Association of Schools and Departments of Journalism. In addition to permanent faculty members, the department annually appoints a journalist to fill a visiting professorship.

Undergraduate study

Students in journalism and mass communications must fulfill the general requirements of the College of Arts and Sciences for either a B.S. or a B.A. degree. Beyond this they develop individualized programs within the framework of a broad, liberal arts education in consultation with their advisors. Approximately one-quarter of a student's total course work is taken in the department. To earn a major in the department requires a minimum of 84 credit hours outside the department and a minimum of 30 credit hours and a maximum of 36 credit hours within the department.

All majors are required to achieve a 2.5 grade point average in journalism and mass communications courses in order to qualify for graduation.

Courses in the department are in two areas: those which focus on the relationship of mass communications to society; and those designed for professional training and skill development. Students may select from several options within two majors, and must specify major and option upon completion of 45 (40-50) semester hours.

Enrollment guides for majors are available in 104 Kedzie Hall.

Journalism and mass communications major

Requirements for all options listed below include a minimum of 84 credit hours outside the department. Majors will complete 30, but not more than 36, semester hours of JMC or RTV courses, including the required courses in the options they choose. All JMC majors will be required to complete ECON 110, Economics I (3 hours).

News-editorial option

Required		
JMC 235	Survey of the Mass Media	3
JMC 275	Reporting I	3
JMC 280	Editing I	3
JMC 380	Reporting II (Print)	3
JMC 480	Editing II	3
JMC 600	Public Affairs Reporting	3
JMC 665	Law of Mass Communications	3

Public relations option

Required		
JMC 235	Survey of the Mass Media	3
JMC 275	Reporting I	3
JMC 280	Editing I	3
JMC 380	Reporting II (Print)	3
JMC 515	Public Relations	3
JMC 635	Public Information Methods	3
JMC 640	Public Relations & Advertising Campaigns	3
JMC 665	Law of Mass Communications	3

Advertising option

Required		
JMC 235	Survey of the Mass Media	3
JMC 275	Reporting I	3
JMC 280	Editing I	3
JMC 380	Reporting II (Print)	3
JMC 320	Principles of Advertising	3
JMC 545	Advertising Media	3
JMC 555	Ad Copy & Layout	3
JMC 640	Public Relations & Advertising Campaigns	3
JMC 665	Law of Mass Communications	3

Magazine option

Required		
JMC 235	Survey of the Mass Media	3
JMC 275	Reporting I	3
JMC 280	Editing I	3
JMC 380	Reporting II (Print)	3
JMC 520	The Modern Magazine	3
JMC 615	Magazine Article Writing	3
JMC 620	Magazine Production	3
JMC 665	Law of Mass Communications	3

General option

Required		
JMC 235	Survey of the Mass Media	3
JMC 275	Reporting I	3
JMC 280	Editing I	3
JMC 320	Principles of Advertising	3
JMC 380	Reporting II (Print)	3
JMC 665	Law of Mass Communications	3

All those enrolled in the general sequence will complete at least one of the following courses:

JMC 660	History of Journalism	3
JMC 685	The Mass Communicator: Ethics & Issues	3

Radio-television major

All RTV majors will be required to complete: ECON 110, Economics I (3 hours).

Required		
RTV 230	Radio-Television & Society	3
JMC 235	Survey of the Mass Media	3
RTV 240	Radio-Television Audio I	3
RTV 250	Television Video I	3
RTV 260	Radio-Television Continuity	3
JMC 275	Reporting I	3
RTV 330	Reporting II (Radio-Television)	3
RTV 665	Radio-Television Regulation & Responsibility	3

Select courses from the following groups to meet minimum requirements in each group.

Group I

RTV 630	Radio-Television Programming	3
RTV 660	History of Broadcasting	3
RTV 665	Radio-Television Regulation & Responsibility	3
RTV 685	Radio-Television Management	3

Minimum three hours; maximum nine hours.

Group II

JMC 320	Principles of Advertising	3
RTV 610	Entertainment Script Writing	3
RTV 615	Documentary Script Writing	3
RTV 620	Radio-Television Advertising	3
RTV 675	Radio-Television Criticism	3

Minimum three hours; maximum nine hours.

Electives

Remaining hours in journalism and mass communications may include any RTV or JMC courses, provided the student does not exceed the maximum for Group I or II. (Minimum 30 hours., maximum 36 hours within journalism and mass communications; 84 hours outside journalism and mass communications.)

Agricultural journalism major

Students may enroll in the College of Agriculture and earn a major in agricultural journalism by taking courses in the journalism department. See the College of Agriculture section for details.

Home economics and mass communications

Students may enroll in the College of Home Economics and earn a major in home economics journalism by taking courses in the journalism department. See the College of Home Economics section for details.

Journalism education

Students may satisfy requirements to teach journalism in public schools by either of the following programs: B.A. or B.S. in the College of Arts and Sciences and teacher certification; B.S. in the College of Education with journalism concentration. Under the first option students qualify for teacher certification by completion of specified courses in the College of Education. See that college's section for details.

Credit through quiz-out

Any student may apply to test out of professional practice courses in journalism and mass communications by presenting to the department head a portfolio or tapes or other suitable evidence of performance which would allow assessment of course-related experience. After review of the material, the department head may refer the application to the appropriate instructor who will determine the number of credit hours, if any, and the method of examination or evaluation to be employed to determine whether credit shall be given. Such credit shall be granted on a credit-no credit basis, and the student may specify whether such credit is to be presented for graduation. No more than 12 semester hours may be earned through quiz-out and at least 18 of the student's journalism credit hours must be KSU resident hours.

Transfer students

Students transferring to the undergraduate program in journalism and mass communications at Kansas State University may transfer a maximum of 12 semester hours in the major. Courses in journalism and mass communications above the 12-hour maximum may not be accepted as electives outside the major and will not be accepted as part of the graduation requirement. No journalism and mass communications course will transfer to KSU without a grade of C or better.

The Department of Journalism and Mass Communications will not honor an accumulation of credits in journalism and mass communications courses which consist of laboratory work only. The department will review the work presented by the transfer student and may accept a maximum of three credit hours for all such work, equivalent to courses such as publications practices or radio or cable television participation.

No transfer credit will be given for Reporting II, Editing I, or Law of Mass Communications unless such work was taken at a college or university accredited in journalism by the American Council on Education for Journalism.

Graduate study

Graduate students in mass communications at Kansas State University may work toward the M.S. degree in journalism or the M.A. degree in radio-TV.

Courses provide for professional practice along with studies in research methods and in communication process and theory. Students are encouraged to plan a program of study to help meet individual goals in such areas of interest as news-editorial,

magazine, public relations, advertising, and radio-TV management.

Many graduate students structure a specialized academic program which combines journalism or radio-TV with another interest area, such as agriculture, home economics, wildlife conservation, or education.

Students whose undergraduate major is not in journalism or radio-TV may be admitted provisionally, with a requirement to complete basic undergraduate courses along with their graduate work. The number of remedial hours required varies. Previous course work and professional experience are considered. Students with no previous course work or professional experience may expect to take up to nine remedial credit hours in the journalism program or 15 remedial credit hours in the radio-TV program.

There are three options for completing the requirements for the master's degree in journalism or in radio-TV. The thesis option requires a total of 30 graduate credit hours, consisting of 24 graduate course credit hours and six credit hours for the thesis. The project-report option requires 30 graduate credit hours, consisting of 28 graduate course credit hours and two credit hours for the project-report. The course work option (non-thesis) requires 30 hours of graduate course credits. All options require written comprehensive examinations and a final oral examination.

The thesis option is primarily for students with a research interest or for students who enter the program after a number of years of professional experience. The non-thesis option is recommended for the student whose primary interest is professional practice or who does not have an undergraduate major in journalism or radio-TV.

Additional details are included in the department's "Guide to Graduate Study," available in the department office.

Courses in journalism

Undergraduate credit

JMC 235. Survey of the Mass Media. (3). Historical, social, legal and economic aspects of mass communications; current practices and responsibilities; role of newspapers, magazines, radio, television, motion pictures and other mass media in society, and their impact on world affairs. JMC-235-0-0601

JMC 245. Color Photography. (3) II. Introduction to the advanced 35mm camera in producing color slides. On-location photography; no processing. Students supply 35mm camera and film. Not open to those students who have taken JMC 310. JMC-245-0-0602

JMC 250. Agricultural Journalism. (3). Agricultural information techniques and methods of working with the mass media. Emphasis on writing experience. Ability to type helpful. Pr.: ENGL 100. For non-majors only. JMC-250-1-6-0602

JMC 275. Reporting I. (3). Instruction in news gathering and news writing techniques. Pr.: ENGL 120, sophomore standing; ability to type 30 words a minute. JMC-275-1-4-0602

JMC 280. Editing I. (3). Survey of graphic arts principles; fundamentals of the editing process; relationship of the graphic arts principles to the elements of newspaper design and the total editing function. Pr.: Consent of instructor or JMC 275 with grade of C or better. JMC-280-1-4-0602

JMC 310. Photography I. (3) I, II, S. Basic camera and laboratory techniques of photography. Not open to students who have taken JMC 245. JMC-310-1-4-0602

JMC 320. Principles of Advertising. (3). An examination of the advertising field and its relationship to marketing and journalism. JMC-320-0-0602

JMC 360. Publications Practice. (1-4). Practical work in newspaper and yearbook production, and photography on student publications under supervision of an instructor. Three hours lab a week for each hour of credit. Pr.: Consent of instructor. JMC-360-2-0602

JMC 380. Reporting II (Print). (3). Three hours rec. and six hours reporting for the *Kansas State Collegian* each week. Pr.: JMC 280 with grade of C or better. JMC-380-1-2-0602

JMC 399. Honors Seminar in Mass Communications. (3). Pr.: Honors students only; consent of supervising instructor. JMC-399-0-0601

JMC 480. Editing II. (3). Advanced study of the editing processes with emphasis on handling the story, writing headlines, use of all elements for packaging the news, and creative use of the editing tools. Two hours of rec. and six hours editing for the *Kansas State Collegian* each week. Pr.: JMC 380 with grade of C or better. JMC-480-1-2-0602

JMC 499. Seminar Honors Thesis. (2). Pr.: Honors students only; consent of supervising instructor. JMC-499-4-0601

Undergraduate and graduate credit in minor field

JMC 510. Yearbook Editing and Management. (2). Planning, editing, layout, writing, and financing a publication. JMC-510-1-4-0602

JMC 515. Public Relations. (3). Media, methods, principles, and practices of public relations. Pr.: Junior standing. JMC-515-0-0602

JMC 520. The Modern Magazine. (3) I, II. An overview of the magazine field. Development of magazine in the United States; the magazine industry; functions of contemporary magazines. Study of the structure, content and style of different magazines. Pr.: Junior standing or consent of instructor. JMC-520-0-0602

JMC 535. Photojournalism. (1-3) I. The materials, principles, and processes of photography directed toward visual reporting in newspapers, magazines, and other media. Content and credit vary. Potential topics include documentary picture story, essay and sequence; spot news, feature, and sports photography; combining words and pictures effectively; marketing techniques; legal restrictions. Lectures, demonstrations, and laboratory. Pr.: JMC 310 with grade of C or better and either JMC 250 or JMC 275 and access to a 35mm or 2¼ x 2¼ camera. May be repeated for a maximum of 4 semester hours. JMC-535-1-0602

JMC 545. Advertising Media. (3). The selecting, scheduling, selling, and buying of the various advertising media. Pr.: JMC 320 with grade of C or better. JMC-545-0-0602

JMC 550. Mass Communications Internship. (1-3). The student works in a professional capacity under proper professional and faculty supervision with reports from student and supervisor required. Pr.: 12 semester hours of JMC courses and consent of instructor. JMC-550-2-0601

JMC 555. Advertising Copy and Layout. (3). The creating, designing, and writing of advertising copy for the print media stressing the production of a workable advertising campaign. Pr.: JMC 320 with grade of C or better. JMC-555-1-7-0602

JMC 560. Non-Traditional Press. (3). A study of the changing journalistic attitudes toward objectivity in the 1960s and since. Examination of the resulting resurgence and development of alternative, minority, underground and counterculture media. Techniques, style, impact, use, and consequences to the media and society of the new journalism will be analyzed. JMC-560-0-0602

Undergraduate and graduate credit

JMC 600. Public Affairs Reporting. (3). Investigative reporting of local, state, and national affairs. Pr.: JMC 380. JMC-600-0-0602

JMC 605. Supervision of School Publications. (3). A methods course for those planning to teach secondary or junior college journalism courses and advise high school or junior college publications. JMC-605-0-0602

JMC 610. Interpretation of Contemporary Affairs. (3). Critical questions of the day and interpretive articles and editorials which document and analyze the news. Pr.: JMC 380. May be repeated once for credit with written permission of instructor and department head required. JMC-610-0-0602

JMC 615. Magazine Article Writing. (3). Preparation of feature stories and articles; techniques of market analysis, and marketing of articles written in course. Pr.: JMC 380 and JMC 520. JMC-615-0-0602

JMC 620. Magazine Production. (3). The practical application of theory on the fields of writing, editing, graphic reproduction, layout and management of magazines. Pr.: JMC 380 and 520. JMC-620-0-0602

JMC 625. Formation of Public Opinion. (3). Role of interpersonal and mass communications information on public opinion. Practical survey experience. Pr.: Junior standing and consent of instructor. JMC-625-0-0602

JMC 635. Public Information Methods. (3). Application of the principles of public relations to actual and hypothetical cases. Emphasis on communications techniques used in public relations. Pr.: JMC 515. JMC-635-0-0602

JMC 640. Public Relations and Advertising Campaigns. (3). The in-depth handling of an organization's public relations and advertising, including analyzing its situation, planning a program and developing the communications to be used. Pr.: JMC 320 or 515 with grade or C or better; senior standing. JMC-640-0-0602

JMC 645. The Minority Press in America. (3). Consideration of the growth, development and current status of the ethnic minority press in the United States. JMC-645-0-0602

JMC 650. Newspaper Management. (3). The management of newspapers dealing with organization, ownership, promotion, research, production, equipment, markets, personnel, legal aspects, advertising, buying and selling of newspaper properties, business practices and news policy. Pr.: JMC 480 or conc. enrollment. JMC-650-0-0602

JMC 660. History of Journalism. (3). A review of the growth and development of the press in the United States, with attention to the interrelationships of the press and the social, economic and political forces. Pr.: Junior standing or consent of instructor. JMC-660-0-0602

JMC 665. Law of Mass Communications. (3). A study of legal issues relating to mass communications. Emphasis on defamation, privacy, copyright, administrative controls, and other areas related to the mass media. Pr.: Senior standing or consent of instructor. JMC-665-0-0601

JMC 670. International Communications. (3). Comparative study of world press systems and the role of communications in national development. JMC-670-0-0601

JMC 680. Readings in Mass Communications. (1-3). Investigation of the literature of mass communications. Pr.: Minimum of nine hours of completed course work in JMC, senior or graduate standing and consent of supervisory instructor. JMC-680-3-0602

JMC 685. The Mass Communicator: Ethics and Issues. (3). A consideration of influences and controls that define the role of the mass communicator in American society. Pr.: Senior standing. JMC-685-0-0602

JMC 690. Problems In Mass Communications. (1-4). Pr.: Background of courses needed for problem undertaken. JMC-690-3-0602

JMC 730. Seminar in the Future of the Media. (3). A study of philosophical and technological advances in mass communications with emphasis on projected patterns of future growth and development. Restricted to seniors and graduate students. JMC-730-0-0601

JMC 740. Colloquium in Mass Communications. (1-3). Discussion of selected topics in mass communications research and practice. Restricted to seniors and graduate students. JMC-740-0-0601

JMC 765. Communication Theory. (3). An examination of major communication theories as they relate to individual, interpersonal, group, and mass communications. JMC-765-0-0601

JMC 770. Professional Journalism Practicum. (1-4). For advanced students. Supervised practical work in the area of professional journalism and mass communications. Includes laboratory investigation, field work, and internships. Pr.: JMC 280 or RTV 330 and consent of supervising instructor. JMC-770-2-0602

JMC 780. Research Methods in Mass Communications. (3). Survey of research methods used in the study of the mass media. JMC-780-0-0602

Graduate credit

JMC 899. Research in Mass Communications. (Var.). Pr.: Registration in the Graduate School and sufficient training to carry on the line of research undertaken. JMC-899-4-0602

Courses in radio and television

Undergraduate credit

RTV 230. Radio-Television and Society. (3) I, II. Influence of electronic media in today's culture. Examination of the dynamics of telecommunications including production techniques. RTV-230-0-0603

RTV 240. Radio-Television Audio I. (3) I, II, S. Basic training in audio for radio and TV, emphasizing laboratory experiences. Pr.: RTV 230 with grade of C or better. RTV-240-1-0603

RTV 250. Television Video I. (3) I, II, S. Basic training in video production for broadcast TV, cable, and industrial video, emphasizing laboratory experiences as well as lectures. Pr.: RTV 230 with grade of C or better. RTV-250-1-0603

RTV 260. Radio-Television Continuity. (3) I, II, S. Study of forms and the preparation of non-dramatic scripts for various types of broadcast programs. Pr.: Major in JMC or RTV. RTV-260-0-3-0603

RTV 265. Public Broadcasting. (2). Intersession only. A study of the history, current status, and future of non-commercial radio and television. The role of public broadcasting within the spectrum of the mass media: its strengths, its weaknesses, and its current directions. The course will include field trips to public broadcast stations, and visits to campus by persons actively engaged in public broadcasting. RTV-265-0-0603

RTV 320. Fundamentals of Radio-Television Performance. (3) I, II. Training in non-dramatic radio and television performance, including news, commercials and interviews. Emphasis on laboratory experience. Pr.: RTV 240 and RTV 250 with grade of C or better, SPCH 106 (or SPCH 105). RTV-320-1-0603

RTV 330. Reporting II (Radio-Television). (3). Practical experience in gathering, writing, editing, and presenting news for KSDB-FM and cable television, and study of current issues in radio-television news. Pr.: JMC 275, RTV 240 and RTV 250 with grades of C or better. Required of all students with RTV concentration. RTV-330-1-5-0603

RTV 340. Intermediate Radio Production. (3) I, II. Theory and practice of radio remotes, automation and multi-channel recording and editing in the production of commercials, dramatic narrative and documentary programs. Pr.: RTV 240, 260, 320 with grades of C or better. RTV-340-1-0603

RTV 350. Intermediate Television Production. (3) II. Computer-generated visuals, color television, and specialized television recording techniques. Production practice from the viewpoint of directors, producers, and performers. Pr.: RTV 250 with grade of C or better. RTV-350-1-0603

RTV 360. Radio News Practicum. (2). Intersession only. A concentrated course in writing and performing radio news stories. The course will emphasize development of broadcast reading style and presence. Pr.: RTV major. RTV-360-1-0603

RTV 370. Agriculture Broadcasting. (2). Intersession only. Training in performance of farm markets and farm news, as well as theory behind the markets and how such information affects the entire Kansas economy. Guest lecturers share their expertise. Pr.: JMC, RTV, Ag Journalism, Home Ec Mass Communications majors. RTV-370-0-0603

RTV 455. KSDB-FM Participation. (1) I, II. Supervised performance in the operation of the University's student FM radio station. Pr.: RTV 240, 320, or consent of instructor. RTV-455-5-0603

RTV 475. Television Participation. (1) I, II. Supervised participation in program production for entertainment, industrial, or closed circuit video. Pr.: RTV 350 or conc. enrollment. RTV-475-5-0603

RTV 490. Radio-Television Senior Seminar. (1) II. Current issues in electronic media offered in modules by various members of the R-TV faculty and professional guests. Preparation for graduation and employment. Pr.: Senior majors only. RTV-490-0-0603

Undergraduate and graduate credit

RTV 610. Entertainment Script Writing. (3) I. The principles and preparation of dramatized broadcast programs. Pr.: RTV 230, 240 with a grade of C or better. RTV-610-0-0603

RTV 615. Documentary Script Writing. (3) II. Study of the principles and preparation of non-fiction broadcast programs. Pr.: RTV 230 and 240 with a grade of C or better. RTV-615-0-0603

RTV 620. Radio-Television Advertising Sales. (3) I. Retail advertising applied to radio, television and cable systems. Retail ad campaigns, media buying, selling techniques. Pr.: JMC 320 or MKTG 400 with a grade of C or better. RTV-620-0-0603

RTV 630. Radio-Television Programming. (3) I. The principles, planning, and development of radio-television programs and schedules. Pr.: RTV 230 with grade of C or better. RTV-630-0-0603

RTV 660. History of Broadcasting. (3). History of the radio-television industry; its effects on American life; the economic, political, and social significance of broadcasting. Pr.: Junior standing. RTV-660-0-0603

RTV 665. Radio-Television Regulation and Responsibility. (3) II. The major laws and legal decisions which affect broadcasting and cable, with attention to the Federal Communication Act, rules and regulations, and other laws relating to broadcasting and cable management. Pr.: Senior standing or above and RTV 230 with grade of C or better. RTV-665-0-0603

RTV 675. Radio-Television Criticism. (3) II. The principles and criteria of mass media criticism, with emphasis on broadcasting. Pr.: Junior standing and RTV 230 with a grade of C or better. RTV-675-0-0603

RTV 685. Radio-Television Management. (3) II. The practices and problems of managing radio or television facilities. Pr.: GENBA 420 (Management Concepts) or RTV 230 (Radio-Television and Society) with grade of C or better. RTV-685-0-0603

RTV 750. Radio-Television Research. (3). Study and application of radio-television research, its literature and methodology. Pr.: Minimum of 15 hours of completed course work, or conc. enrollment in JMC; consent of instructor. RTV-750-0-0603

Mathematics

R. Richard Summerhill,* head of department

Professors Burckel,* Curtis,* Dixon,* Dressler,* Greechie,* Lee,* Marr,* F. Miller,* Pigno,* Ramm,* Saeki,* Shult,* Stamey,* Strecker,* Stromberg,* Yee,* and Young;* Associate Professors Muenzenberger,* W. Parker,* Summerhill,* and Surowski;* Assistant Professors Barab, Chermak,* Cochrane, Delgado, Forbes,* Herman,* and Willis; Emeriti: Professors Fuller,* and T. Parker;* Associate Professors Mossman* and Sloat;* Instructors Chatelain, Ratcliffe, Sitz, and Woldt.

Mathematics is the unparalleled model of an exact science, the epitome of creative art, and a language essential to understanding our modern technological world.

Mathematics graduates are sought both for their specialized knowledge and for their ability to think analytically. Mathematics is an excellent major for pre-professionals and for liberal arts students who desire a major that combines a flexible program with an in-depth study of fertile subject matter and analytic methodology.

Undergraduate study

Students in mathematics may obtain either the B.A. or B.S. degree. The requirements for a mathematics major, in addition to those of the university and college, are:

MATH 220	Analytic Geometry & Calculus I **and**	4
MATH 221	Analytic Geometry & Calculus II **and**	4
MATH 222	Analytic Geometry & Calculus III	4
	or	
MATH 225	Analytic Geometry & Calculus I-S **and**	6
MATH 226	Analytic Geometry & Calculus II-S	6
MATH 240	Elementary Differential Equations	4
	or	
MATH 250	Linear Algebra & Differential Equations I **and**	3
MATH 251	Linear Algebra & Differential Equations II	3
STAT 510	Introductory Statistics & Probability I	3

and 21 hours in mathematics numbered 400 and above. After completing the 200 level courses, students usually concentrate their upper division work in one of the following programs.

The pre-graduate program
Students who intend to enter graduate school to work toward an advanced degree in either pure or applied mathematics should include among their upper division mathematics courses:

MATH 610	Abstract Algebra I	3
MATH 611	Abstract Algebra II	3
MATH 621	Analysis I	3
MATH 622	Analysis II	3
MATH 600	Set Theory & Logic	3

They should also take courses in related scientific fields, especially physics and computer science. At least one foreign language, preferably French, German, or Russian, should be studied as a research tool for graduate work.

The mathematics education program
Students who intend to become secondary school mathematics teachers may prepare for teacher certification while completing the requirements for a degree in mathematics. A number of upper division courses offered by the mathematics department are designed particularly for such students. These include:

MATH 512	Introduction to Modern Algebra	3
MATH 520	Foundations of Analysis	3
MATH 521	The Real Number System	3
MATH 570	History of Mathematics	3
MATH 572	Foundations of Geometry	3
MATH 573	Transformation & Vector Geometry	3
MATH 791	Topics in Mathematics for Secondary School Teachers	3

For specific certification requirements for secondary education, please see the College of Education section.

Students majoring in elementary education who wish to use mathematics as an area of concentration should consider taking their 15 hours of mathematics from among the following courses:

MATH 100	College Algebra	3
MATH 110	Mathematics, Its Form & Impact	3
MATH 308	Topics in Mathematics for Elementary School Teachers	4
MATH 309	Intuitive Geometry	2
MATH 312	Finite Applications of Mathematics	3
MATH 313	Computational Number Theory	3

The pre-industrial program
Students who intend to seek employment in industry after earning a bachelor's degree should take Advanced Calculus I, II (MATH 553, 554) in the junior year. In addition, the following courses are strongly recommended:

MATH 510	Discrete Mathematics	3
MATH 514	Vector Analysis	3
MATH 550	Introduction to Complex Analysis	3
MATH 551	Applied Matrix Theory	3
MATH 552	Elementary Partial Differential Equations	3
MATH 555	Elementary Numerical Analysis	3
MATH 640	Ordinary Differential Equations I	3
MATH 641	Ordinary Differential Equations II	3

It is recommended that the student also take at least six hours of upper-division courses outside the mathematics department in areas such as engineering, physics, statistics, or computer science.

Dual degrees and majors
Programs are available which lead to a dual degree in mathematics and a field in another college such as business or engineering. The degree requirements of both majors, including the college requirements for a B.A. or B.S., must be met and a minimum of 150 hours must be completed.

Programs supporting a dual major are also offered. Students may major in mathematics and another discipline within the College of Arts and Sciences. The degree requirements for both departments must be met.

Information for non-majors
Most colleges and departments require at least one mathematics course. Students should check with their advisors to determine which mathematics courses to take. Advisors are provided information that will aid them in using the student's ACT score to select the appropriate entry-level mathematics course. Advisors also have access to extended mathematics course descriptions that will help them to advise students.

Graduate study

The Department of Mathematics offers work leading to the degrees of master of science and doctor of philosophy. Students planning a career in college or university teaching or research in mathematics should plan a program leading to an advanced degree. For admission to graduate work in mathematics, a student should have completed work in mathematics equivalent to what is required for a B.S. or B.A. degree at KSU with a B average or better. Prospective graduate students whose undergraduate training does not meet these requirements may be admitted on a provisional basis. Such students are required to remedy deficiencies in undergraduate preparation by completing the undergraduate courses without receiving graduate credit. University requirements for advanced degrees are given in the Graduate School section of the catalog. Information on mathematics departmental programs and requirements and on facts concerning courses offered during the summer term may

be obtained by writing to the Department of Mathematics, 136 Cardwell Hall, Manhattan, Kansas 66506.

Courses in mathematics

MATH 010. Intermediate Algebra. (3) I, II, S. Review of elementary algebra; topics preparatory to MATH 100. Pr.: One unit of high school algebra. MATH-010-0-1701

Undergraduate credit

MATH 100. College Algebra. (3) I, II, S. Pr.: Plane geometry and satisfactory placement test score in algebra. Students with one and one-half entrance units of algebra should normally be eligible for this course. MATH-100-0-1701

MATH 101. The Metric System. (1). On sufficient demand. A systematic study of the metric system including historical background of various systems, structure of the metric system itself, and relation to existing systems; attention on compctent use of metric terms in problem solving. MATH-101-0-1701

MATH 110. Mathematics, Its Form and Impact. (3) I, II, S. This course requires no mathematical background. It includes the development and analysis of mathematical structures; applications of the structures are used to exemplify the linguistic use of mathematics and its impact on society. MATH-110-0-1701

MATH 125. College Algebra and Trigonometry. (5) I, II. This course combines the material taught in MATH 100 and MATH 150. It is intended for students who need both courses, or who need trigonometry but are weak in algebra. Pr.: One and one-half entrance units of algebra and one unit plane geometry. MATH-125-0-1701

MATH 150. Plane Trigonometry. (3) I, II, S. Trigonometric and inverse trigonometric functions; trigonometric identitics and equations; applications involving right triangles and applications illustrating the laws of sines and cosines. Pr.: One unit plane geometry and one and one-half units of high school algebra. MATH-150-0-1701

MATH 170. Precalculus Mathematics. (4) I, II, S. Introduction to elementary functions and coordinate geometry. This course will provide the necessary background for students entering MATH 210 or MATH 220. Pr.: One and one-half years of high school algebra and one year of high school geometry. MATH-170-0-1701

MATH 199. Freshman Mathematics Seminar. (1) I. Topics of special interest to freshmen in mathematics, including orientation to the mathematics curriculum, possible careers in mathcmatics, and cultural and professional aspects of mathematics. MATH-199-2-1701

MATH 201. Elementary Applied Mathematics. (3) I, II. Applications of precalculus mathematics with emphasis on the techniques of solving word problems. Pr.: Following entrance units: algebra, one and one-half; geometry, one; trigonometry, one-half. MATH-201-0-1701

MATH 205. General Calculus and Linear Algebra. (3) I, II. Introduction to calculus and linear algebra conccpts that are particularly useful to the study of economics and business administration with special emphasis on working problems. Pr.: MATH 100 with C or better grade (College Algebra in the preceding semester is recommended). MATH-205-0-1701

MATH 210. Technical Calculus I. (3) I, II. A condensed course in analytic geometry and differential calculus with an emphasis on applications. Pr.: MATH 150 or 170 or two years of high school algebra and one semester of high school trigonometry. MATH-210-0-1701

MATH 211. Technical Calculus II. (3) I, II. A continuation of MATH 210 to include integral calculus with an emphasis on application. Pr.: MATH 210. MATH-211-0-1701

MATH 220. Analytic Geometry and Calculus I. (4) I, II, S. Analytic geometry, differential and integral calculus of polynomials. Pr.: MATH 150 or 170 or two years of high school algebra and one semester of high school trigonometry. MATH-220-0-1701

MATH 221. Analytic Geometry and Calculus II. (4) I, II, S. Continuation of MATH 220 to include transcendental functions. Pr.: MATH 220. MATH-221-0-1701

MATH 222. Analytic Geometry and Calculus III. (4) I, II, S. Continuation of MATH 221 to include functions of more than one variable. Pr.: MATH 221. MATH-222-0-1701

MATH 225. Analytic Geometry and Calculus I-S. (6) I. Analytic geometry, differential and integral calculus of functions of one variable. Accelerated coverage of the material in MATH 220, 221, 222. Pr.: Consent of department. MATH-225-0-1701

MATH 226. Analytic Geometry and Calculus II-S. (6) II. Continuation of MATH 225 to include transcendental functions. Pr.: MATH 225. MATH-226-0-1701

MATH 240. Elementary Differential Equations. (4) I, II, S. Elementary techniques for solving ordinary differential equations and applications to solutions of problems in science and engineering. Pr.: MATH 222. MATH-240-0-1701

MATH 250. Linear Algebra and Differential Equations I. (3) I. An integrated introduction to linear algebra and differential equations, including matrices and determinants, linear systems, eigenvalues, first and second order differential equations with emphasis on applications, Laplace transforms and systems of differential equations. Pr.: MATH 221 or MATH 225. MATH-250-0-1701

MATH 251. Linear Algebra and Differential Equations II. (3) II. Continuation of MATH 250. Pr.: MATH 250 or consent of department. MATH-251-0-1701

MATH 308. Topics in Mathematics for Elementary School Teachers. (4) I, II, S. Systems of numeration, sets and numbers, properties of the number system, relations, real numbers, elementary logic, concept of proof, elements of algebra and statistics. Pr.: Consent of instructor. MATH-308-0-0833

MATH 309. Intuitlve Geometry. (2) S. Measurement, triangles, quadrilaterals, nonmetric geometry, similarity, volumes, elementary coordinate geometry. Pr.: Consent of instructor. MATH-309-0-1701

MATH 312. Flnite Applications of Mathematics. (3) S. Consideration of applications of set theory, matrix algebra, linear programming and graph theory that can be illustrated in the secondary school classroom. MATH-312-0-1701

MATH 313. Computational Number Theory. (3) I, II, S. Topics in number theory selected from the areas of: divisibility, primes, modular arithematic and special types of numbers. Emphasis is on computations. Primarily for prospective elementary school teachers of mathematics. Pr.: Sophomore standing, MATH 100. MATH-313-0-1701

MATH 398. Sophomore Seminar. (3) II. Seminar in mathematics for honors students. Pr.: Membership in honors program. MATH-398-3-4900

MATH 399. Seminar in Mathematics. (Var.). On sufficient demand. Primarily for Honors Students. Pr.: Consent of instructor. MATH-399-3-1701

MATH 498. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the Arts and Sciences Honors Program. MATH-498-3-1701

MATH 499. Undergraduate Topics in Mathematics. (Var.) I, II, S. Reading courses in advanced undergraduate mathematics. Pr.: Background of courses needed for topic undertaken and consent of instructor. MATH-499-3-1701

Undergraduate and graduate credit in minor field

MATH 501. Introduction to Mathematics in the Behavioral Sciences. (3) I, II. Introduction of matrices, relations, sets and groups with applications to the behavioral sciences. Pr.: Student must be a major in anthropology, economics, history, political science, psychology, or sociology; or have the consent of the instructor. MATH-501-0-1701

MATH 510. Discrete Mathematics. (3) I, II, S. Combinatorics and graph theory. Topics selected from counting principles, permutations and combinations, the inclusion/exclusion principle, recurrence relations, trees, graph coloring, Eulerian and Hamiltonian circuits, block designs and Ramsey Theory. Pr.: Sophomore standing and MATH 100. MATH-510-0-1701

MATH 511. Introduction to Algebraic Systems. (3) I. Properties of groups, rings, domains and fields. Examples selected from subsystems of the complex numbers. Elementary number theory and solving equations. Pr.: MATH 222 or 226. MATH-511-0-1701

MATH 512. Introduction to Modern Algebra. (3) I, II. Introduction to the basic algebraic systems, viz., groups, rings, integral domains, fields, elementary number theory. Special emphasis will be given to methods of theorem proving. Pr.: MATH 220 or 225 or graduate standing. MATH-512-0-1701

MATH 514. Vector Analysis. (3). A standard introduction to vector algebra and calculus in two and three dimensions. Dot and cross products, differentiation of vector functions, the operators div, grad and curl, line and surface integrals and the theorems of Green, Gauss, and Stokes. Applications to physics and other sciences will be included. Pr.: MATH 222 or consent of instructor. MATH-514-0-1703

MATH 520. Foundations of Analysis. (3). A study of sets and sequences, neighborhood, limit point, convergence, and open and closed set in the real line and in the plane, the concept of continuous function. Pr.: MATH 222 or 226. MATH-520-0-1701

MATH 521. The Real Number System. (3). An extensive development of number systems, with emphasis upon structure. Includes systems of natural numbers, integers, rational numbers and real numbers. Pr.: MATH 221 or 225. MATH-521-0-1701

MATH 550. Introduction to Complex Analysis. (3) I, II. Complex analytic functions and power series, complex integrals. Taylor and Laurent expansions, residues, Laplace transformation, and the inversion integral. Pr.: MATH 240 or 250. MATH-550-0-1703

MATH 551. Applied Matrix Theory. (3) I, II. Matrix algebra, solutions to systems of linear equations, determinants, vector spaces, linear transformations, eigenvalues, linear programming, approximation techniques. Pr.: MATH 100 and junior standing. MATH-551-0-1703

MATH 552. Elementary Partial Differential Equations. (3) I. Orthogonal functions, Fourier Series, boundary value problems in partial differential equations. Pr.: MATH 240 or 250. MATH-552-0-1703

MATH 553. Advanced Calculus I. (3) I. Functions of one real variable: limits, continuity, differentiability, Riemann-Stieltjes integral, sequences, series, power series, improper integrals. Pr.: MATH 222 or MATH 226. MATH-553-0-1701

MATH 554. Advanced Calculus II. (3) II. Functions of several variables: partial differentiation and implicit function theorems, curvilinear coordinates, differential geometry of curves and surfaces, vectors and vector fields, line and surface integrals, double and triple integrals, Green's Theorem, Stokes' Theorem and Divergence Theorem. Pr.: MATH 553. MATH-554-0-1701

MATH 555. Elementary Numerical Analysis. (3) I, II. Solution of algebraic and transcendental equations, with emphasis on linear algebraic systems. Introduction to linear programming. Interpolation and curve fitting. Numerical differentiation and integration with an introduction to methods for solving ordinary differential equations. Pr.: MATH 240 or 251, 551, and knowledge of a programming language. MATH-555-0-1701

MATH 570. History of Mathematics. (3) II. In alternate years. Cannot be used as part of the advanced mathematics needed by mathematics majors. Pr.: MATH 220 or 225. MATH-570-0-1701

MATH 572. Foundations of Geometry. (3). Euclid's parallel postulate, non-Euclidean geometries, incidence, affine geometries, order congruence, continuity. Pr.: MATH 222 or 226. MATH-572-0-1701

MATH 573. Transformation and Vector Geometry. (3) I. Concepts of transformations and vectors and their applications to Euclidean Geometry. Pr.: MATH 222 or MATH 226. MATH-573-0-1799

MATH 575. Advanced Analytic Geometry. (3). On sufficient demand. Properties of conic sections; poles and polars; selected topics in Solid Analytic Geometry. Pr.: MATH 240 or 250. MATH-575-0-1701

Undergraduate and graduate credit

MATH 600. Set Theory and Logic. (3). An introduction to logic, mathematical proof, and elementary set theory. Topics include elementary logic, the basic constructions of set theory, relations, partitions, functions, cartesian products, disjoint unions, orders, and a construction of the natural numbers. Additional topics will include ordinal and cardinal numbers, the Axiom of Choice, and transfinite induction. Special emphasis will be given to proving theorems. Pr.: MATH 554 or graduate standing. MATH-600-0-1701

MATH 601. Elementary Topology I. (3) I. Introduction to axiomatic topology including a study of compactness, connectedness, local properties, cardinal invariants and metrizability. Pr.: MATH 600. MATH-601-0-1701

MATH 602. Elementary Topology II. (3) II. Continuation of MATH 601. Pr.: MATH 601. MATH-602-0-1701

MATH 603. Introduction to Linear Algebra. (2-3) I. Finite dimensional vector spaces; linear transformations and their matrix representations; dual spaces, invariant subspaces; Euclidean and unitary spaces; solution spaces for systems of linear equations. Pr.: MATH 512. MATH-603-0-1701

MATH 610. Abstract Algebra I. (3) I. Groups, rings, fields, vector spaces and their homomorphisms. Elementary Galois theory and decomposition theorems for linear transformations on a finite dimensional vector space. Pr.: MATH 512 or consent of instructor. MATH-610-0-1701

MATH 611. Abstract Algebra II. (3) II. Continuation of MATH 610. Pr.: MATH 610 or consent of instructor. MATH-611-0-1701

MATH 621. Analysis I. (3) I, II, S. Metric spaces, limits, continuity, differentiation, mean value theorems, Riemann-Stieltjes integral, series. Pr.: MATH 240 or 250 or graduate standing. MATH-621-0-1701

MATH 622. Analysis II. (3) I, II. Function spaces, Stone-Weierstrass Theorem, Ascoli Theorem, series, introduction to Lebesgue measure. Pr.: MATH 621. MATH-622-0-1701

MATH 640. Ordinary Differential Equations I. (3) I. First order equations and applications, second order equations and oscillation theorems, series solutions and special functions, Sturm-Liouville problems, linear systems, autonomous systems and phase plane analysis, stability, Liapunov's method, periodic solutions, perturbation and asymptotic methods, existence and uniqueness theorems. Pr.: MATH 240 or MATH 251. MATH-640-0-1703

MATH 641. Ordinary Differential Equations II. (3) II. Continuation of MATH 640. Pr.: MATH 640. MATH-641-0-1703

MATH 671. Projective Geometry. (3) I. Affine spaces, Euclidean spaces, projective spaces, coordinizations, duality principle, geometric lattices, classifications, subgeometries of projective geometry (especially non-Euclidean geometries). Pr.: MATH 512. MATH-671-0-1701

MATH 689. Combinatorial Analysis. (3) II. In alternate years. Permutations, combinations, inversion formulae, generating functions, partitions, finite geometries, difference sets, and other topics. Pr.: MATH 512. MATH-689-0-1701

MATH 704. Introduction to the Theory of Groups. (3) II. Introduction to abstract group theory; to include permutation groups, homomorphisms, direct products, Abelian groups. Jordan-Holder and Sylow theorem. Pr.: MATH 512. MATH-704-0-1701

MATH 706. Theory of Numbers. (2-3) II. In alternate years. Divisibility properties of integers, prime numbers, congruences, multiplicative functions. Pr.: MATH 221 or 226. MATH-706-0-1701

MATH 710. Introduction to Category Theory. (3). Categories, duality, special morphism, functors, natural transformations, limits and colimits, adjoint situations, and applications. Pr.: MATH 601 and MATH 610. MATH-710-0-1701

MATH 711. Category Theory. (3). Set valued functors and concrete categories, factorization structures, algebraic and topological functors, categorical completions, Abelian categories. Pr.: MATH 710. MATH-711-0-1701

MATH 713. Advanced Applied Matrix Theory. (3) II. A development of the concepts of eigenvalues by considering applications in differential equations and quadratic forms. A discussion of the Jordan canonical form, functions of matrices, vector and matrix norms, and various related numerical methods. Pr.: MATH 551 or MATH 603. MATH-713-0-1701

MATH 740. Calculus of Variations. (3). On sufficient demand. Necessary conditions and the Euler-Lagrange equations, Hamilton-Jacobi theory, Noether's theorems, direct methods, applications to geometry and physics. Pr.: MATH 622 or equiv. MATH-740-0-1701

MATH 772. Elementary Differential Geometry. (3) I. Curves and surfaces in Euclidean spaces, differential forms and exterior differentiation, differential invariants and frame fields, uniqueness theorems for curves and surfaces, geodesics, introduction to Riemannian geometry, some global theorems, minimal surfaces. Pr.: MATH 240 or 250. MATH-772-0-1701

MATH 780. Numerical Solution of Ordinary Differential Equations. (3) II. One-step and multi-step methods for initial value problems. Stability, consistency, and convergence of these methods. Stiff equations and boundary value problems. Pr.: MATH 555 and knowledge of a programming language. MATH-780-0-1701

MATH 781. Differentiable Manifolds I. (3) I. In alternate years. Differentiable structures, tangent bundles, tensor bundles, vector fields and differential equations, integral manifolds, differential forms, introduction to Lie groups. Pr.: MATH 772, or consent of instructor. MATH-781-0-1701

MATH 782. Differentiable Manifolds II. (3) II. In alternate years. Fibre bundles, theory or connections, linear and affine connections, Riemann manifolds, submanifolds of Riemann manifolds, complex manifolds. Pr.: MATH 781. MATH-782-0-1701

MATH 785. Numerical Solution of Partial Differential Equations. (3) II. Formulation of difference equations and treatment of boundary conditions. Discretization and round-off errors. Stability. Relaxation, alternating direction, and strongly implicit iterative methods. Variational and projection methods. Pr.: MATH 780 and knowledge of a programming language. MATH-785-0-1701

MATH 791. Topics in Mathematics for Secondary School Teachers. (3). Topics of importance in the preparation of secondary school teachers to teach modern mathematics. May be repeated for credit. MATH-791-0-0833

Graduate credit

MATH 810. Higher Algebra I. (3) I. Theory of groups, theory of rings and ideals, polynomial domains, theory of fields and their extensions. Pr.: MATH 611. MATH-810-0-1701

MATH 811. Higher Algebra II. (3) II. Continuation of MATH 810. Pr.: MATH 810. MATH-811-0-1701

MATH 821. Real Analysis I. (3) I. Measurability, integration theory, regular Borel measures, the Riesz representation theorem, and Lebesgue measure in Euclidean spaces. Pr.: MATH 622. MATH-821-0-1701

MATH 822. Real Analysis II. (3) II. The LP-spaces, Banach spaces, and Hilbert spaces, complex measures and the Radon-Nikodym theorem, the Fubini theorem on double integration, and differentiation. Pr.: MATH 821. MATH-822-0-1701

MATH 825. Complex Analysis I. (3) I. Holomorphic functions, harmonic functions, the Cauchy integral theorem, normal families and the Riemann mapping theorem, and the Mittag-Leffler theorem. Pr.: MATH 822 or consent of department. MATH-825-0-1701

MATH 826. Complex Analysis II. (3) II. Analytic continuation, the Picard theorem, HP-spaces, elementary theory of Banach algebra, the theory of Fourier transforms, and the Paley-Wiener theorems. Pr.: MATH 825. MATH-826-0-1701

MATH 852. Functional Analysis I. (3) I. In alternate years. Topics to be selected from linear topological spaces, semi-normed linear spaces, Banach spaces, Hilbert spaces, Banach algebras, spectral theory, harmonic analysis, and others. May be taken four times for a total of twelve hours credit. Pr.: MATH 822. MATH-852-0-1701

MATH 853. Functional Analysis II. (3) II. In alternate years. Continuation of Functional Analysis I. May be repeated for credit. Pr.: MATH 852. MATH-853-0-1701

MATH 861. Numerical Analysis I. (3) I. Topics covered may include elementary functional analysis relevant to numerical analysis; numerical solution of differential or integral equations: analysis of stability and convergence; numerical linear algebra including large scale systems; approximation theory. Pr.: MATH 554, 555. MATH-861-0-1701

MATH 862. Numerical Analysis II. (3) II. Continuation of MATH 861. Pr.: MATH 861. MATH-862-0-1701

MATH 866. Partial Differential Equations I. (3) I. Elliptic, parabolic and hyperbolic partial differential equations of the second order. First order partial differential equations, characteristics. Linear and non-linear hyperbolic systems, non-linear elliptic equations. Pr.: MATH 554, 641. MATH-866-0-1701

MATH 867. Partial Differential Equations II. (3) II. Continuation of MATH 866. Pr.: MATH 866. MATH-867-0-1701

MATH 871. General Topology I. (3) I. Topological spaces and topological invariants; continuous mappings and their invariants perfect mappings; topological constructs (product, quotient, direct and inverse limit spaces). Pr.: MATH 602. MATH-871-0-1701

MATH 872. General Topology II. (3) II. Compact spaces and compactification, uniform and proximity spaces, metric spaces and metrization, topology of D^n, function spaces, complete spaces, introduction to homotopy theory. Pr.: MATH 871. MATH-872-0-1701

MATH 897. Seminar in Mathematics Education. (1-3) II, S. Topics in Mathematics and the related applications in Mathematics Education. Pr.: Graduate standing and consent of instructor. MATH-897-2-0833

MATH 898. Topics in Mathematics. (Var.) I, II, S. Pr.: Background of courses needed for topic undertaken and consent of instructor. MATH-898-4-1701

MATH 899. Thesis Topics. (Var.) I, II, S. MATH-899-4-1701

MATH 914. Lattice Theory I. (3) I. In alternate years. Posets, quantum logics, orthocomplemented, orthomodular, and Boolean lattices; the concepts of atomicity, completeness, reducibility, modularity, M-symmetry, O-symmetry, distributivity, algebraic coordinization, and specific realizations. Pr.: Consent of instructor. MATH-914-0-1701

MATH 915. Lattice Theory II. (3) II. In alternate years. Continuation of MATH 914. Pr.: MATH 914. MATH-915-0-1701

MATH 971. Algebraic Topology I. (3) I. Homotopy groups, covering spaces, fibrations, homology, general cohomology theory and duality, homotopy theory. Pr.: MATH 811 and 872. MATH-971-0-1701

MATH 972. Algebraic Topology II. (3) II. Continuation of Algebraic Topology I. Pr.: MATH 971. MATH-972-0-1701

MATH 991. Topics in Algebra. (3). On sufficient demand. Selected topics in modern algebra. May be taken more than once for credit. Pr.: Consent of instructor. MATH-991-0-1701

MATH 992. Topics in Analysis. (3). On sufficient demand. Selected topics in modern analysis. May be taken more than once for credit. Pr.: Consent of instructor. MATH-992-0-1701

MATH 993. Topics in Harmonic Analysis. (3). On sufficient demand. Selected topics in harmonic analysis. May be taken more than once for credit. Pr.: Consent of instructor. MATH-993-0-1701

MATH 994. Topics in Applied Mathematics. (3). On sufficient demand. Selected topics in applied mathematics. May be taken more than once for credit. Pr.: Consent of instructor. MATH-994-0-1701

MATH 995. Topics in Geometry. (3). On sufficient demand. Selected topics in geometry, such as convex sets of distance geometry. May be taken more than once for credit. Pr.: Consent of instructor. MATH-995-0-1701

MATH 996. Topics in Topology. (3). On sufficient demand. Selected topics in topology, such as homotopy, topological groups, topological dynamics, or algebraic topology. May be taken more than once for credit. Pr.: Consent of instructor. MATH-996-0-1701

MATH 997. Topics in Number Theory. (3) I, II. On sufficient demand. Selected topics in Number Theory. May be taken more than once for credit. Pr.: MATH 706 or consent of instructor. MATH-997-0-1702

MATH 999. Research in Mathematics. (Var.) I, II, S. Pr.: Sufficient training to carry on the line of research undertaken and consent of instructor. MATH-999-4-1701

Military Science

LTC Don B. McCann, head of department

Assistant Professors Major Piper, Major Clark, Captain Krimmer, Captain Carey, and Captain Cole; Instructors SGM Vovk and SFC Klinedinst.

The Army Reserve Officers' Training Corps (AROTC) program is open to all university students. The military science courses are credit-awarding courses and are applicable as electives to any degree program. Cadets may pursue any curriculum offered by the University.

The military science curriculum is separated into two elements: a basic course, normally completed during freshman and sophomore years which does not carry any military obligation for participation; and an advanced course oriented toward junior and senior years. Students who satisfy prerequisites and requirements of the advanced course receive commissions as second lieutenants. Texts and other materials required in ROTC courses are provided without cost.

Basic course

The basic course consists of a series of four two-credit hour courses open to all University students. These four courses do not obligate a student to any military service. Freshman students planning to enter the Advanced Course program must complete MSCI 104 and MSCI 105. Sophomore students are required to take MSCI 204 and 205. The basic courses are designed to introduce the student to a variety of confidence-building skills and situations that, while military-oriented, will enhance the student's overall college experience.

Advanced course

Prerequisites for admittance to the advanced course may be satisfied in a number of ways: completion of the basic course or summer program; attendance at a basic course summer camp prior to enrollment as a junior; three or more years of junior (high school level) ROTC; or prior military service. Students accepted into the advanced course agree to complete the curriculum and to accept an army commission. Each advanced course cadet receives $100 per month during the school year in return for this agreement. Advanced course students attend three hours of recitation and one hour of leadership laboratory each week for which they receive three credit hours each semester. A six-week summer camp, with pay, is an integral part of the advanced course and normally is completed between the junior and senior years. Airborne, Air Assault, Ranger, and Northern Warfare Training Course (Alaska) are U.S. Army schools available to qualified volunteers.

Basic camp

A six-week basic course summer camp is available as part of the two-year program. This program is designed to allow ROTC participation by community college transfer students who were unable to take the basic course, sophomores who have not taken basic course classes, and graduate degree candidates who require at least two years for post-graduate curriculum completion. Application for admittance to the two-year program should be made to the Department of Military Science by students early in the spring semester. Satisfactory completion of the basic course summer camp earns four hours of academic credit and meets all prerequisites for entry into the advanced course. The summer camp in itself does not incur any military obligation. Students receive compensation based on current military pay scales for attendance at basic camp.

Summer program

During the eight-week regular summer school, the Department of Military Science offers MSCI 102, 103, 204, and 205, which are also taught during the regular semester. Students may take the summer classes to qualify or complete qualification for enrollment in the advanced course.

Discharge of duty

Federal laws provide that ROTC graduates may discharge military obligation in one of three ways: three years active duty; three months active duty with a balance of seven years and nine months (eight years total) with Army Reserve or National Guard organizations; or Army ROTC scholarship students must serve four years in active duty and four years with Army Reserve or National Guard organizations. Preferences indicated by the graduate for a particular form of service are normally respected. Members of Army National Guard and Reserve units may enter the Simultaneous Membership Program (SMP).

Scholarships

The Army provides two-, three-, or four-year scholarships to selected high school and college students. These scholarships provide full tuition and fees, pay for all required books and required supplies, and pay the student a subsistence of $100 per school month. Four-year scholarships are available to high school seniors who apply during the fall semester. The remaining scholarships are available on a competitive basis to all students, enrolled or unenrolled in ROTC, who wish to receive commissions as officers. They must have two years remaining towards undergraduate or graduate programs. These scholarships, applied for during the spring semester, become effective the following fall. The Kansas Army National Guard offers one-, two-, three-, or four-year scholarships to selected high school and college students. These scholarships provide tuition and pay the student $100 per month during the student's tenure as an advanced course cadet.

Voluntary organizations

The department sponsors three voluntary organizations, KSU Rifle Club and a student chapter of the Association of the United States Army, which engage primarily in professional or community service activities. A wide range of functions include such things as traffic assistance at University sporting events, United Way campaign support, Bloodmobile support, Wildcat Adventure 10K and Two-Mile Fun Run, field trips, participation in rifle competition, Big Eight rifle matches and other professional development activities. The ROTC Ranger Platoon is organized to provide training and leadership experience required for Army ROTC cadets desiring to attend Ranger School. It also supplements ROTC classroom instruction and field training to better prepare cadets for Advanced Camp.

Students desiring additional information on these organizations are invited to contact the department.

Recommended courses

In recognition of leadership's many facets, the department requires in some cases and recommends in other cases that students enrolled in ROTC select from a number of University course offerings which complement the leadership program. One course in each of written communication skills, human behavior, and military history are required. One course in each of national security policy and management are recommended. A majority of these courses may be applied as elective classes for the student's degree requirements.

These courses include:

Written communication skills:

ENGL 120	English Composition II	3
ENGL 400	Advanced Composition	3
ENGL 415	Written Communication for Engineers	3
ENGL 200	Intermediate Composition	3

Human behavior:

PSYCH 425	Problem Solving & Decision Making	3
PSYCH 550	Group Dynamics	3
PSYCH 560	Industrial Psychology	3

Military history:

HIST 513	Battles & Leaders	3
HIST 514	World War II	3
HIST 545	War in the Twentieth Century	3
HIST 546	History of American Military Affairs	3

National security policy:

POLSC 110	Introduction to Political Science	3
POLSC 719	National Security Policy & Process	3
POLSC 728	Comparative Security Establishments	3
POLSC 742	International Conflict	3
POLSC 749	International Defense Strategies	3

Management:

MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MANGT 421	Production/Operations Management	3
MANGT 466	Management Information Systems	3
MANGT 520	Organizational Behavior	3

Basic course
Undergraduate credit

MSCI 100. Mountaineering and Introduction to Military Science 1A. (1) I, II, S. Basic mountaineering and introduction to Army ROTC. One hour rec. a week. MSCI-100-0-1801

MSCI 102. Basic Riflery and Introduction to Military Science 1B. (1) I, II, S. Basic riflery and 3-position match shooting. Including a brief introduction to the Army ROTC program. One hour rec. a week. MSCI-102-0-1801

MSCI 103. Orienteering and Introduction to Military Science 1C. (1) I, II, S. Introduction to orienteering and land navigation. One hour rec. a week. Also includes a brief introduction to the Army ROTC program. MSCI-103-0-1801

MSCI 104. Marksmanship and Basic Military Concepts. (2) I, S. Rifle marksmanship and introduction of basic military concepts and the ROTC program. Two hours rec. a week and one hour leadership lab a week. MSCI-104-0-1801

MSCI 105. Introduction to Military Leadership and Confidence. (2) II, S. Introduction to Military Leadership using various leadership theories. Confidence is practiced through mountaineering and orienteering instruction. Two hours rec. a week and one hour leadership lab a week. MSCI-105-0-1801

MSCI 201. Leadership Guidance. (1) I, II, S. Individual personal development, reactions and pitfalls, personal guidance and performance evaluation, and role-playing situations, focusing on the military leader's responsibilities as an advisor and the impact of effective guidance on the organization. MSCI-201-0-1801

MSCI 202. Map Reading. (1) I, II, S. Military geography, map reading and land navigation. One hour rec. a week. MSCI-202-0-1801

MSCI 203. Care of Combat Casualties. (1) I, II, S. Care and treatment of wounds and injuries normally associated with the modern battlefield, includes casualty evaluation, treatment and medical prevention programs. MSCI-203-100-1-1801

MSCI 204. Care of Combat Casualties and Introduction to the US Army. (2) I, S. Care and treatment of wounds and injuries normally associated with the modern battlefield. Includes casualty evaluation, treatment and medical prevention programs. The course explains use of military field dressings, material in standard army medical bags and field expedient devices. It also introduces the student to the role of the US Army, Army Reserve and National Guard. This includes the customs and traditions of the service, the Army rank structure, Branches of the Army and what life is like in the military service. It includes four leadership labs to introduce the student to Army drill and ceremonies, and physical fitness requirements. Credit may not be received for both MSCI 203 and 204. MSCI-204-0-1801

MSCI 205. Map Reading and Common Military Concepts. (2) II, S. Military geography, map reading and land navigation. Concepts of military leadership to include conducting military inspections, the makeup of an Army Division and the leadership necessary to operate the Division, and introduction to military communications. Credit may not be received for both MSCI 202 and 205. MSCI-205-0-1801

MSCI 250. Military Science 2C. (4) S. A six-week basic course summer camp taught off-campus at Fort Knox, Kentucky. Camp content includes lectures, demonstrations, practical exercises in leadership, and other military-related skills. Pr.: Two years remaining on campus after completion of camp, meet the physical standards, and permission of the professor of military science. MSCI-250-0-1801

Advanced course
Undergraduate credit

MSCI 300. Military Science 3A. (3) I. Advanced leadership and management, methods of instruction, leadership lab. Three hours rec. and one hour leadership lab a week. Pr.: Completion of M.S. I and M.S. II or acceptable equiv. MSCI-300-0-1801

MSCI 302. Military Science 3B. (3) II. Branches of the Army, military communications, small unit tactics, preparation for summer camp, leadership lab. Three hours rec. and one hour leadership lab a week. Pr.: Completion of M.S. I and M.S. II or acceptable equiv. MSCI-302-0-1801

MSCI 400. Military Science 4A. (3) I. Administrative/staff operations and procedures, strategic analyses, leadership lab. Three hours rec. and one hour leadership lab a week. Pr.: Completion of MSCI III. MSCI-400-0-1801

MSCI 402. Military Science 4B. (3) II. Administrative/staff operations and procedures, military law, career planning, leadership lab. Three hours rec. and one hour leadership lab a week. Pr.: Completion of MSCI III. MSCI-402-0-1801

Modern Languages

Thomas A. O'Connor,* head of department

Professor O'Connor;* Associate Professors Alexander,* Beeson,* Benson,* Bulmahn,* Corum,* Dehon,* Kolonosky,* McGraw,* Ossar,* Shaw,* and Tunstall;* Assistant Professors Fleak, Mendenhall,* and Miller;* Instructor Driss; Emeriti: Professor Moore;* Associate Professor Pettis.*

Undergraduate study

All regular courses offered by the Department of Modern Languages may be taken by non-majors on an A/Pass/F basis, subject to the provisions of the University policy on such an option. Language laboratories are offered only on a Credit/No-Credit basis.

Students majoring in languages should enroll for the bachelor of arts degree.

Within the modern language major, French, German, and Spanish are offered; in highly unusual cases, a major in classics or Russian may be arranged.

For a language major, 30 hours in a single language above the level of I and II must be completed. Students majoring in languages must take two survey courses in the chosen language. In French or German, the student must also take three literature courses at the 700 level. In Spanish the student must take at least one course from three of the following four groups: 751, 752, 755; 761, 764, 775; 756, 757, 763; 760, 771, 772.

The attention of the student preparing for graduate school or for high school teaching is directed to the corollary course in linguistics, LG 780. Six hours of history in the country of the student's major language interest are desirable.

Entering students who have had previous language experience and who plan to continue language study are required to take a language placement examination at the beginning of the first semester of language study. If there is any doubt as to proper placement, the head of the Department of Modern Languages should be consulted.

Students wishing to acquire retroactive credit for language proficiency gained before coming to KSU should consult with the head of the Department of Modern Languages.

Graduate study

In modern languages, the degree master of art is offered in the fields of French, German, and Spanish. General requirements for the master of arts degree can be found in the Graduate School section of this catalog.

Detailed information concerning the graduate program in modern languages and financial support available may be obtained by writing to the head of the department.

The department cooperates with several others in the South Asia language and area studies program, details of which are given in the Academic Programs section of the catalog.

The Department of Modern Languages co-sponsors a national literary journal, *Studies in Twentieth Century Literature*.

Programs abroad

The Department of Modern Languages sponsors summer study programs in both Paris and Mexico City, and cooperates in the German program in Eutin. All inquiries should be addressed to the head of the department.

Honors program

Undergraduate credit

MLANG 399. Honors Seminar in Modern Languages. (1-3) I, II. Reading and discussion of selected masterpieces of European literature in English translation. Open to non-language majors in the Honors Program. MLANG-399-0-1101

MLANG 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the Arts and Sciences Honors Program. MLANG-499-4-1101

Courses in modern languages

Undergraduate and graduate credit in minor field

MLANG 507. European Literature in Translation. (3). Selected readings in English from the major authors of Europe and the Spanish-speaking world. MLANG-507-0-1505

Graduate credit

MLANG 800. Colloquium in Modern Languages. (2) I. A graduate colloquium for M.A. candidates in French, German, and Spanish. Variable topics in literary and cultural fields appropriate to study in common by students in these languages. Pr.: Graduate standing. MLANG-800-0-1101

Arabic

Undergraduage credit

ARAB 181. Arabic I. (4). Introduction to the structure of modern Arabic. Essentials of grammar, speaking, reading, and writing. ARAB-181-0-1107

ARAB 182. Arabic II. (4). Continuation of Arabic I. Pr.: ARAB 181 or equiv. ARAB-182-0-1107

ARAB 281. Arabic III. (4). Further development of language skills. Pr.: ARAB 182 or equiv. ARAB-281-0-1107

ARAB 282. Arabic IV. (3). Continuation of Arabic III. Pr.: ARAB 281 or equiv. ARAB-282-0-1107

Undergraduate and graduate credit in minor field

ARAB 540. Special Studies in Arabic. (Var.). Pr.: Consent of the department head and instructor involved. ARAB-540-0-1107

French

FREN 001. Orientation for Summer School Program in Paris. (0). FREN-001-0-1102

Undergraduate credit

FREN 109. French IL. Language laboratory. Strongly recommended for students taking French I. Conc. enrollment in French I required. For credit/no credit only. FREN-109-0-1102

FREN 110. French IIL. (1). Language laboratory. Strongly recommended for students taking French II. Conc. enrollment in French II required. For credit/no credit only. FREN-110-0-1102

FREN 111. French I. (4). Introduction to the structure of modern French, emphasizing the spoken language with practice in the language laboratory. FREN-111-0-1102

FREN 112. French II. (4). Continuation of French I, completion of basic presentation of the structure of French. Emphasis on spoken language, use of language lab. Pr.: FREN 111 or equiv. FREN-112-0-1102

FREN 211. French III. (4). Intensive review of the structure of the French language. Reading and discussion of French prose. Pr.: FREN 112 or equiv. FREN-211-0-1102

FREN 212. Elementary French Conversation IIIA. (2). Course not open to fluent speakers of French. Normally to be taken conc. with French III. Pr.: FREN 112 or equiv. FREN-212-0-1102

FREN 213. French IV. (3). Reading and discussion of modern French prose and review of the more difficult points of French grammar. Pr.: FREN 211 or equiv. FREN-213-0-1102

FREN 214. French Conversation IVA. (2). Continued practice in conversational French. Not open to fluent speakers of French. Normally to be taken conc. with French IV. Pr.: FREN 211 or equiv. FREN-214-0-1102

FREN 502. French Literature in Translation. (3). Selected readings in English from the works of such major French authors as Flaubert, Zola, Sartre, Camus, and Ionesco. Not accepted for major credit in French. FREN-502-0-1102

FREN 510. Modern French Culture. (2). French culture since World War II with special emphasis on social, economic, historical, and artistic developments of that period. Taught in English. Not accepted for major credit in French. FREN-510-0-1102

Undergraduate and graduate credit in minor field

FREN 511. Masterpieces of French Literature I. (3). The reading and discussion of major works of French literature from the Middle Ages to the end of the eighteenth century. Pr.: FREN 213 or equiv. FREN-511-0-1102

FREN 512. Masterpieces of French Literature II. (3). The reading and discussion of major works of French literature from the early nineteenth century to the present. Pr.: FREN 213 or equiv. FREN-512-0-1102

FREN 513. French Composition and Conversation. (3). Review in depth of the structure of the language. Intensive practice in written and conversational French. Pr.: FREN 213 or equiv. FREN-513-0-1102

FREN 514. French Civilization. (3). Introduction to French culture with special emphasis on social and historical developments since World War II. Pr.: Eighteen hours of college French or equiv. FREN-514-0-1102

FREN 515. Literary Perspectives in French. (3) I. The examination of several approaches to French prose and poetry. Reading and discussion to develop a practical critical vocabulary and an awareness of stylistic devices. Pr.: FREN 213 or equiv. FREN-515-0-1102

FREN 517. Commercial French. (3). Advanced grammar necessary for adequate oral and written expression in international business and diplomatic situations, including specialized terminology, conversation and discussion, and translation. Pr.: FREN 213. FREN-517-0-1102

FREN 518. Advanced French Conversation. (1) II. Practice in spoken French, with emphasis on idiomatic expression. May be repeated twice for credit. Pr.: FREN 513. FREN-518-0-1102

FREN 519. Special Studies in French. (Var.). Pr.: Consent of department head and instructor involved. FREN-519-3-1102

Undergraduate and graduate credit

FREN 709. Medieval French Literature. (3). An introduction to literary forms, style, and thought from the 11th century to the 15th century in France. Readings in modern French include *Chanson de Roland,* Chretien de Troyes, *Roman de la Rose,* etc. Pr.: Twenty-one hours of college French or equiv. FREN-709-0-1102

FREN 710. Sixteenth-Century French Literature. (3). Reading and discussion of selected prose and poetry of the French Renaissance. Pr.: Twenty-one hours of college French or equiv. FREN-710-0-1102

FREN 711. Seventeenth-Century French Literature I. (3) I. Various literary forms of the French "baroque" period. Reading of representative texts by Corneille, Pascal, Descartes, and others. Pr.: Twenty-one hours of college French or equiv. FREN-711-0-1102

FREN 712. Seventeenth-Century French Literature II. (3) II. Various literary forms of the French "classical" period. Reading of representative texts by Moliere, Racine, Lafayette, La Fontaine, and others. Pr.: Twenty-one hours of college French or equiv. FREN-712-0-1102

FREN 713. Eighteenth-Century French Literature. (3). Critical study of the literature of the Enlightenment. Pr.: Twenty-one hours of college French or equiv. FREN-713-0-1102

FREN 714. Nineteenth-Century French Literature I. (3). A study of Pre-romanticism and Romanticism. Pr.: Twenty-one hours of college French or equiv. FREN-714-0-1102

FREN 715. Nineteenth-Century French Literature II. (3). A study of Realism, Naturalism, and Symbolism. Pr.: Twenty-one hours of college French or equiv. FREN-715-0-1102

FREN 716. Twentieth-Century French Literature I. (3). The study of major themes and trends in the novel, drama, and poetry as reflected in representative works of such authors as Proust, Mauriac, Cocteau, Claudel, Valery, and others. Pr.: Twenty-one hours of college French or equiv. FREN-716-0-1102

FREN 717. Twentieth-Century French Literature II. (3). Reading and analysis of recent innovations in literary theory and practice as found in the works of such authors as Sartre, Camus, Beckett, Ionesco, Robbe-Grillet, Sarraute, and others. Pr.: Twenty-one hours of college French or equiv. FREN-717-0-1102

FREN 718. The French Novel. (3). The development of the novel from the 17th century to the present, seen through selected masterworks. Pr.: Twenty-one hours of college French. FREN-718-0-1102

FREN 719. Advanced Spoken and Written French. (3) II. An advanced, intensive study of French prose style. Introduction to the techniques of translation from English to French. Intensive practice in oral style and diction. Pr.: Twenty-one hours of college French. FREN-719-0-1102

FREN 720. Seminar in French. (3). A seminar with variable topics. Pr.: Senior standing or consent of the instructor. FREN-720-0-1102

FREN 799. Problems in Modern Languages. (Var.). FREN-799-3-1101

Graduate credit

FREN 899. Research in Modern Languages. (Var.). Pr.: Thirty hours in one modern language or equiv. FREN-899-4-1101

German

GRMN 002. Orientation for Summer School Program in Germany. (0). GRMN-002-0-1103

Undergraduate credit

GRMN 119. German IL. (1). Language laboratory. Strongly recommended for students taking German I. Conc. enrollment in German I required. For credit/no credit only. GRMN-119-0-1103

GRMN 120. German IIL. (1). Language laboratory. Strongly recommended for students taking German II. Conc. enrollment in German II required. For credit/no credit only. GRMN-120-0-1103

GRMN 121. German I. (4). Introduction to the structure of modern German. Practice of the spoken language with additional experience in the language lab. GRMN-121-0-1103

GRMN 122. German II. (4). Continuation and conclusion of the introduction to modern German, reading of selected prose texts. Pr.: GRMN 121 or equiv. GRMN-122-0-1103

GRMN 221. German III. (4). Reading and discussion of a selection of modern German prose and review of the structure of German. Pr.: GRMN 122 or equiv. GRMN-221-0-1103

GRMN 222. Elementary German Conversation IIIA. (2). Practice in beginning conversational German. Course not open to fluent speakers of German. Course normally taken conc. with German III. Pr.: GRMN 122 or equiv. GRMN-222-0-1103

GRMN 223. German IV. (3). Reading and discussion of modern German prose and review of the more difficult points of German grammar. Pr.: GRMN 221 or equiv. GRMN-223-0-1103

GRMN 224. German Conversation IVA. (2). Continued practice in conversational German. Course not open to fluent speakers of German. Normally taken conc. with German IV. Pr.: GRMN 221 or equiv. GRMN-224-0-1103

GRMN 503. German Literature in Translation. (3). Selected readings in English from such major German authors as Mann, Brecht, Hesse, Grass, and Kafka. Not accepted for major credit in German. GRMN-503-0-1103

Undergraduate and graduate credit in minor field

GRMN 521. Introduction to German Literature I. (3). Literary movements of the nineteenth century are introduced through the reading and discussion of texts in various forms and by representative authors. Pr.: GRMN 223 or equiv. GRMN-521-0-1103

GRMN 522. Introduction to German Literature II. (3). Discussion of signficant works of twentieth-century prose, poetry, and drama. Special emphasis is placed on the literature of recent decades. Pr.: GRMN 223 or equiv. GRMN-522-0-1103

GRMN 523. German Composition. (3). A study of German syntax and exercises in composition. Pr.: GRMN 223 or equiv. GRMN-523-0-1103

GRMN 524. German for Reading Knowledge I. (3). The grammar and syntax of German and the reading of basic material selected from modern German texts. Not for fulfillment of humanities distribution requirement. GRMN-524-0-1103

GRMN 525. German for Reading Knowledge II. (3). Continued reading of material from modern German texts. Not for fulfillment of humanities distribution requirement. Pr.: GRMN 524 or equiv. GRMN-525-0-1103

GRMN 526. Business German. (3). Advanced grammar necessary for adequate oral and written expression in international business and diplomatic situations, including specialized terminology, conversation and discussion, and translation. Pr.: GRMN 523. GRMN-526-0-1103

GRMN 529. Special Studies in German. (Var.). Pr.: Consent of department head and instructor involved. GRMN-529-3-1103

GRMN 530. German Civilization. (3) II. The political and cultural development of the German-speaking people and their role and influence in the history of the Western world. Pr.: Eighteen hours of college German. GRMN-530-0-1103

Undergraduate and graduate credit

GRMN 721. German Classicism. (3) I. Reading and discussion of late eighteenth-century texts, including works by Goethe, Schiller, Hoelderlin, etc. Pr.: Twenty-one hours of college German or equiv. GRMN-721-0-1103

GRMN 722. German Romanticism. (3) II. A study of representative works of German Romantic literature by such authors as Schlegel, Tieck, Eichendorff, Novalis. Pr.: Twenty-one hours of college German or equiv. GRMN-722-0-1103

GRMN 723. Goethe and Faust. (3) I. The writings of Goethe and his masterpiece, Faust. Pr.: Twenty-one hours of college German or equiv. GRMN-723-0-1103

GRMN 724. German Prose and Drama of the Nineteenth Century. (3) II. A consideration of post-Romantic German literature with special emphasis on the novella. Authors including Grillparzer, Keller, and Meyer are discussed. Pr.: Twenty-one hours of college German. GRMN-724-0-1103

GRMN 725. Early Twentieth-Century German Literature. (3) II. A study of the drama and lyric of Naturalism, Neo-Classicism, Neo-Romanticism, and Expressionism. Pr.: Twenty-one hours of college German. GRMN-725-0-1103

GRMN 726. German Literature since 1945. (3) I. A discussion of the post-war writings of the Gruppe 47, Swiss playwrights and others. Pr.: Twenty-one hours of college German. GRMN-726-0-1103

GRMN 727. The Modern German Novel. (3) II. Theory of the German novel with examples from authors such as Mann, Hesse, Grass, and others. Pr.: Twenty-one hours of college German. GRMN-727-0-1103

GRMN 728. History of the German Language. (3) I. A study of the development of the sounds, forms, and syntax of standard German. Fulfills distribution requirements for major. Pr.: Senior standing. GRMN-728-0-1103

GRMN 729. Seminar in German. (3). A seminar with variable topics, including: Literature of Social and Political Protest, Austrian and Swiss Literature, Literature of the Middle Ages, Emigre Literature, etc. Pr.: Senior standing or consent of instructor. GRMN-729-0-1103

GRMN 731. Advanced Spoken and Written German. (3). Intensive practice in conversation and diction, with considerable practice in the writing of essays in German. Pr.: Twenty-four hours of college German. GRMN-731-0-1103

GRMN 732. Methods in German Literary Criticism. (3). Introduction to the various theories of literary analysis. Interpretation of representative German texts. Pr.: Twenty-four hours of college German. GRMN-732-0-1103

GRMN 733. The Enlightenment and Storm and Stress. (3). A study of representative texts from various movements in German literature and culture of the eighteenth century, including Empfindsamkeit and Rococo. Such authors as Gottsched, Klopstock, Lessing, Lichtenberg, Wieland, and the young Goethe and Schiller will be discussed. Pr.: Twenty-one hours of college German. GRMN-733-0-1103

GRMN 734. Literature of the German Democratic Republic. (3). A study of the literary developments within the German Democratic Republic. The course will consider the writers' role in a socialist society and their impact upon the cultural scene. Readings will include representative works from all genres. Pr.: 21 hours of college German. GRMN-734-0-1103

GRMN 799. Problems in Modern Languages. (Var.). GRMN-799-3-1101

Graduate credit

GRMN 899. Research in Modern Languages. (Var.). Pr.: Thirty hours in one modern language or equiv. GRMN-899-4-1101

Italian

Undergraduate credit

ITAL 129. Italian IL. (1). Language laboratory. Strongly recommended for students taking Italian I. Conc. enrollment in Italian I required. For credit/no credit only. ITAL-129-0-1104

ITAL 130. Italian IIL. (1). Language laboratory. Strongly recommended for students taking Italian II. Conc. enrollment in Italian II required. For credit/no credit only. ITAL-130-0-1104

ITAL 131. Italian I. (4). Introduction to the structure of modern Italian. ITAL-131-0-1104

ITAL 132. Italian II. (4). Continuation and completion of the study of modern Italian grammar, using the facilities of the language laboratory for audiolingual practice. Pr.: ITAL 131 or equiv. ITAL-132-0-1104

ITAL 231. Italian III. (4). Grammar review and reading selections from Italian literature. Pr.: ITAL 132 or equiv. ITAL-231-0-1104

ITAL 232. Italian IV. (3). Selective review of grammar and reading of examples of modern Italian literature. Pr.: ITAL 231 or equiv. ITAL-232-0-1104

ITAL 520. Special Studies in Italian. (Var.). Pr.: Consent of department head and instructor involved. ITAL-520-0-1104

Latin

Undergraduate credit

LATIN 105. Latin and Greek for Scientists. (1) II. The course is designed specifically to provide students of the biological sciences with a background in Latin and Greek roots of scientific terms. Emphasis on prefixes, suffixes, and word derivations. No prior knowledge of either Latin or Greek is required. Course may not be applied toward the fulfillment of either language or humanities requirements for any degree. LATIN-105-0-1109

LATIN 141. Latin I. (4). An introductory study of the structure of Latin. LATIN-141-0-1109

LATIN 142. Latin II. (4). Continuation and completion of the study of the structure of Latin. Pr.: LATIN 141. LATIN-142-0-1109

LATIN 241. Latin III. (4). Review of Latin grammar and reading of an anthology of Roman prose and poetry. Pr.: LATIN 142. LATIN-241-0-1109

LATIN 242. Latin IV. (3). Continuation of the study of Latin syntax and grammar, based upon the reading of Roman prose and poetry. Pr.: LATIN 241. LATIN-242-0-1109

LATIN 501. Classical Literature in Translation. (3). Selected readings in English from the works of such major classical authors as Homer, Euripides, Vergil, Horace, and Terence. LATIN-501-0-1110

Undergraduate and graduate credit in minor field

LATIN 549. Special Studies in Latin. (Var.). Pr.: Consent of the department head and instructor involved. LATIN-549-3-1109

Linguistics

Undergraduate and graduate credit in minor field

LG 730. Foundations of Semiotics. (3) II. The general theory of signs; detailed classification of signs and examination of several semiotic systems such as language, literature, culture, and society. The semiotics of communication and signification. Pr.: Senior standing. LG-730-0-1505

Undergraduate and graduate credit

LG 780. Introduction to Linguistics. (3). Same as SPCH 780 and ENGL 780. LG-780-0-1505

LG 781. Introduction to Historical Linguistics. (3). Same as SPCH 781 and ENGL 781. LG-781-0-1505

LG 783. Phonology I. (3). Same as SPCH 783 and ENGL 783. LG-783-0-1505

LG 785. Syntax I. (3). Same as SPCH 785 and ENGL 785. LG-785-0-1505

LG 792. Field Methods in Linguistics. (3). Same as SPCH 792. LG-792-0-1505

Portuguese

Undergraduate credit

PORT 163. Portuguese I. (4) I. Introduction to the structure of the Portuguese language, stressing Brazilian usage, and emphasizing oral and written skills. PORT-163-0-1199

PORT 164. Portuguese II. (4) II. Continuation of Portuguese I, completion of the basic presentation of structural and linguistic principles of the Portuguese language. Pr.: PORT 163 or equiv. course. PORT-164-0-1199

PORT 266. Portuguese III. (4) I. Intensive review of syntax and a comprehensive structural review of modern Portuguese, stressing Brazilian usage, with emphasis on composition and conversation. Pr.: PORT 164 or equiv. PORT-266-0-1199

PORT 267. Portuguese IV. (3) II. Reading and discussion of selections from contemporary prose, emphasizing Brazilian writings, and review of grammatical structures as needed. Pr.: PORT 266 or equiv. PORT-267-0-1199

Undergraduate and graduate credit in minor field

PORT 572. Special Studies in Portuguese. (1-3). Pr.: Fifteen hours of Portuguese and consent of instructor. PORT-572-0-1199

Russian

Undergraduate credit

RUSSN 149. Russian IL. (1). Language laboratory. Strongly recommended for students taking Russian I. Conc. enrollment in Russian I required. For credit/no credit only. RUSSN-149-0-1106

RUSSN 150. Russian IIL. (1). Language laboratory. Strongly recommended for students taking Russian II. Conc. enrollment in Russian II required. For credit/no credit only. RUSSN-150-0-1106

RUSSN 151. Russian I. (4) I. Introduction to the structure of modern Russian. Emphasis on the sounds of Russian, the use of the Cyrillic alphabet, and oral drills with added practice in the language laboratory. RUSSN-151-0-1106

RUSSN 152. Russian II. (4) II. Continuation of the study of Russian grammar and oral communication. Pr.: RUSSN 151 or equiv. RUSSN-152-0-1106

RUSSN 250. Russian Culture and Civilization. (3). Russia's past and present in the light of principal ideologies with emphasis upon fine art, literature, music, religion, politics, and education. Equal time will be devoted to the Tsarist and Soviet periods. Knowledge of Russian is not required. Same as HIST 250. RUSSN-250-0-1307

RUSSN 251. Russian III. (4) I. Completion of the study of Russian grammar. Reading of selected prose on the intermediate level. Pr.: RUSSN 152 or equiv. RUSSN-251-0-1106

RUSSN 252. Russian IV. (3) II. Intensive review of Russian grammar. Exercises in reading selected modern Russian texts in the original. Pr.: RUSSN 251 or equiv. RUSSN-252-0-1106

RUSSN 504. Russian Literature in Translation: the 19th Century. (3). Survey of principal writers of Tsarist Russia with emphasis upon Turgenev, Dostoevsky, Tolstoy, and Chekhov. RUSSN-504-0-1106

RUSSN 508. Russian Literature in Translation: the Soviet Period. (3). The development of Russian literature since the Revolution, with emphasis upon Mayakovsky, Sholokhov, Pasternak, and Solzhenitsyn. RUSSN-508-0-1106

Undergraduate and graduate credit in minor field

RUSSN 551. Russian V. (3). Reading of Russian short stories of the nineteenth and twentieth centuries, including works by Pushkin, Lermontov, Dostoevsky, and Chekhov. RUSSN-551-0-1106

RUSSN 552. Survey of Russian Literature. (3). A history of Russian literature from its beginnings until the present, with emphasis on the works of the nineteenth century, including those of Pushkin, Lermontov, Gogol, Turgenev, Dostoevsky, and Tolstoy. RUSSN-552-0-1106

RUSSN 553. Russian Conversation and Composition. (3). Discussion in Russian. Extensive practice in writing Russian compositions. RUSSN-553-0-1106

RUSSN 559. Special Studies in Russian. (Var.). Pr.: Consent of department head and instructor involved. RUSSN-559-3-1106

Spanish

SPAN 003. Orientation for Summer School Abroad Program in Mexico City. (0). SPAN-003-0-1105

Undergraduate credit

SPAN 159. Spanish IL. (1). Language laboratory. Strongly recommended for students taking Spanish I. Conc. enrollment in Spanish I required. For credit/no credit only. SPAN-159-0-1105

SPAN 160. Spanish IIL. (1). Language laboratory. Strongly recommended for students taking Spanish II. Conc. enrollment in Spanish II required. For credit/no credit only. SPAN-160-0-1105

SPAN 161. Spanish I. (4). Basic introduction to the structure of the Spanish language, emphasizing oral and written drills, as well as practice in the language laboratory. SPAN-161-0-1105

SPAN 162. Spanish II. (4). Continuation of Spanish I, completion of basic presentation of structural and linguistic principles of the Spanish language, and practice in the language laboratory. Pr.: SPAN 161 or equiv. SPAN-162-0-1105

SPAN 261. Spanish III. (4). An intensive review of syntax and a comprehensive structural review of Spanish, with emphasis on composition and conversation. Pr.: SPAN 162 or equiv. SPAN-261-0-1105

SPAN 262. Elementary Spanish Conversation IIIA. (2). Practice in beginning conversational Spanish. Emphasis on oral communication within the classroom. Course not open to fluent speakers. Should be taken conc. with Spanish III. SPAN-262-0-1105

SPAN 263. Spanish IV. (3). Reading and discussion of selections from contemporary prose, and review of grammatical structures as needed. Pr.: SPAN 261 or equiv. SPAN-263-0-1105

SPAN 264. Elementary Spanish Conversation IVA. (2). Continuation of Elementary Spanish Conversation IIIA. Should be taken conc. with Spanish IV. SPAN-264-0-1105

SPAN 505. Spanish Literature in Translation. (3). Selected readings in English from the works of such major Spanish and Latin-American authors as Garcia Lorca, Borges, Neruda, and Garcia Marquez. Not accepted for major credit in Spanish. SPAN-505-0-1105

Undergraduate and graduate credit in minor field

SPAN 563. Introduction to the Literature of Spanish America. (3). Reading and analysis of representative works of Spanish-American literature from the colonial period to the present. Pr.: SPAN 263 or equiv. SPAN-563-0-1105

SPAN 564. Spanish Composition and Grammar. (3) I. The grammar and syntax of modern Spanish. Course not open to those students whose primary language is Spanish and whose competence has been demonstrated in the language at this level. Pr.: SPAN 263 or equiv. SPAN-564-0-1105

SPAN 565. Spanish Civilization. (3) I. Survey of Spanish culture and civilization from its beginnings to the present; emphasis on Spanish contributions over the centuries in the humanistic field. Pr.: SPAN 263 or equiv. SPAN-565-0-1105

SPAN 566. Hispanic-American Civilization. (3) II. Survey of Spanish-American culture and civilization from 1492 to the present. Pr.: SPAN 263 or equiv. SPAN-566-0-1105

SPAN 567. Introduction to the Literature of Spain. (3). Reading and analysis of representative works of Spanish literature from its beginnings to the present. Pr.: SPAN 263 or equiv. SPAN-567-0-1105

SPAN 569. Special Studies in Spanish. (Var.). Pr.: Consent of department head and instructor involved. SPAN-569-3-1105

SPAN 571. Advanced Spanish Conversation. (2) II. Intensive practice in conversation. May be repeated once or up to four hours. Course not open to those students whose primary language is Spanish and whose competence has been demonstrated in the language at this level. Pr.: SPAN 263 or equiv. SPAN-571-0-1105

SPAN 573. Business Spanish. (3). Advanced grammar necessary for adequate oral and written expression in international business and diplomatic situations, including specialized terminology, conversation and discussion, and translation. SPAN 564 or equiv. SPAN-573-0-1105

SPAN 574. Hispanic Readings. (3). Practice in reading a variety of literary, journalistic and specialized texts. Pr.: SPAN 263 or equiv. SPAN-574-0-1105

Undergraduate and graduate credit

SPAN 751. Spanish-American Narrative to 1950. (3). Development of the narrative in Spanish America from the colonial period to the mid-twentieth century. Analysis and discussion of representative authors from various regions. Pr.: Twenty-one hours of college Spanish or equiv. SPAN-751-0-1105

SPAN 752. Contemporary Spanish-American Narrative. (3). Analysis and discussion of the narrative since approximately 1950, including such outstanding writers as Borges, Cortazar, Fuentes, Garcia Marquez and Vargas Llosa. Pr.: Twenty-one hours of college Spanish or equiv. SPAN-752-0-1105

SPAN 755. Spanish-American Poetry and Drama. (3). Analysis and discussion of Spanish-American poetry and drama, with emphasis on twentieth-century theater. Readings of selected major poets and leading playwrights from various regions of Spanish America. Pr.: Twenty-one hours of college Spanish or equiv. SPAN-755-0-1105

SPAN 756. Nineteenth-Century Spanish Literature. (3). The reading and study of nineteenth-century Spanish literature: drama, essay, novel, poetry and short story. Such authors as Larra, Zorrilla, el Duque de Rivas, Espronceda, Tamayo y Baus, Echegaray, Becquer, and Perez Galdos will be discussed. Pr.: Twenty-one hours of college Spanish or equiv. SPAN-756-0-1105

SPAN 757. Perez Galdos and the Generation of '98. (3). Reading and analysis of works by Perez Galdos and such members of the Generation of '98 as Unamuno, Benavente and Machado, within the historical and cultural framework of the late nineteenth and early twentieth centuries. Pr.: Twenty-one hours of college Spanish or equiv. SPAN-757-0-1105

SPAN 760. Advanced Spoken and Written Spanish.(3). Intensive review of grammatical structure and refinement of standard Spanish usage. Extensive practice in composition and conversation, and translations from English into Spanish. Pr.: Twenty-one hours of college Spanish or equiv. SPAN-760-0-1105

SPAN 761. Medieval and Renaissance Literature. (3). Reading and interpretation of the principal literary works of Medieval and Renaissance Spain, from the *jarchas* and the *Poema de Mio Cid* to the *cronicas* and *La Celestina*, studied within the historical and cultural context of each. Pr.: Twenty-one hours of college Spanish or equiv. SPAN-761-0-1105

SPAN 763. Twentieth-Century Spanish Literature. (3). The major writers and directions of twentieth-century literature in Spain. Analysis and discussion of the works of such representative authors as Unamuno, Jimenez, Guillen, Lorca, Cela, Buero Vallejo and Delibes. Pr.: Twenty-one hours of college Spanish. SPAN-763-0-1105

SPAN 764. Spanish Literature of the Golden Age. (3). Reading and analysis of the works of such major writers as Lope de Vega, Tirso de Molina, Calderon de la Barca, Garcilaso, Fray Luis de Leon, San Juan de la Cruz, Gongora and Quevedo, as well as selected works from the picaresque tradition. Pr.: Twenty-one hours of college Spanish or equiv. SPAN-764-0-1105

SPAN 771. Introduction to Spanish Translation. (3). Translation theory and practice as applied to Spanish. Translations from Spanish to English and English to Spanish, involving unique problems related to science, business, reporting and literature. Pr.: Twenty-one hours of college Spanish or equiv. SPAN-771-0-1105

SPAN 772. The Hispanic World Today. (3). An investigation of selected social, political and humanistic aspects of contemporary Hispanic culture. Pr.: Twenty-one hours of college Spanish or equiv. SPAN-772-0-1105

SPAN 775. Cervantes. (3). Reading of the works of Cervantes and discussion of the literary and cultural background of the period. Pr.: Twenty-one hours of college Spanish or equiv. SPAN-775-0-1105

SPAN 779. Seminar in Spanish. (3). A seminar with variable topics. Pr.: Senior standing or consent of the instructor. SPAN-779-0-1105

SPAN 799. Problems in Modern Languages. (Var.). SPAN-799-3-1101

Graduate credit

SPAN 899. Research in Modern Languages. (Var.). Pr.: Thirty hours in one modern language or equiv. SPAN-899-4-1101

South Asian Languages

Undergraduate credit

URDU 171. Hindi/Urdu I. (4) I. Introduction to the structure of Hindi and Urdu, two languages which are nearly identical in the grammatical structure of their every-day spoken style. Hindi is the dominant language of northern India. Urdu is the national language of Pakistan, also understood throughout the Hindi area. URDU-171-0-1113

URDU 172. Hindi/Urdu II. (4) II. Continuation of Hindi/Urdu I with introduction of the Devanagari (Hindi and Sanskrit) script. Pr.: URDU 171. URDU-172-0-1113

URDU 273. Hindi/Urdu III. (4) I. Continuation of Hindi/Urdu II with gradual transition to more formal styles of language. Pr.: URDU 172. URDU-273-0-1113

URDU 274. Hindi/Urdu IV. (4) II. Continuation of Hindi/Urdu III-with readings in Hindi or Urdu literature according to needs of students. Pr.: URDU 273. URDU-274-0-1113

Undergraduate and graduate credit in minor field

URDU 575. Hindi/Urdu V. (4) I, II, S. Individual study in Hindi or Urdu. Readings, composition, or conversational practice relevant to the student's interests and disciplinary needs. May be repeated for credit. Pr.: URDU 274. URDU-575-0-1113

Undergraduate and graduate credit

URDU 799. Problems in Modern Languages. (Var.). URDU-799-3-1101

Music

Robert A. Steinbauer,* head of department
Jack Flouer,* administrative assistant

Professors Brookhart,* Flouer,* Jackson,* Langenkamp,* Sloop,* Steinbauer,* W. Walker,* and White;* Associate Professors R. Edwards,* Shull,* Sidorfsky,* Sutton,* and R. Walker;* Assistant Professors Caine,* Finck, Funkhouser,* Polich, M. Walker,* and Winkler; Instructors Cochran and Rushing; Assistant Instructors Cox and J. Edwards; Teaching Associates Betton, M.L. Cochran, Proctor, and Schwab.

Undergraduate study

The Department of Music is a member, with institutional accreditation, of the National Association of Schools of Music.

Curricula in performance and music education with majors in theory and composition, voice, piano, organ, strings, woodwind, and brass instruments are offered. Courses in music are available to any student enrolled in the University, subject to prerequisites listed in the course descriptions. Courses in performance do not require prerequisites for those not majoring in music; however, availability of instructor and fees for nonmajors are factors in securing applied lessons. This elective credit cannot be used later toward a music degree unless it meets the requirements of that course as they apply to those majoring in music. No more than two credits a semester will be granted for performance as an elective.

Entrance requirements for new and transfer students

Preliminary placement examinations in piano, the applied major and theory must be taken by all students majoring in music regardless of the curriculum selected.

Students will be advised as to the most appropriate field of concentration and the proper level of study as a result of examination. In regard to transfer students, divisional hearings will determine the number of upper level hours which will be accepted.

Bachelor of arts

120 hours required for graduation

The bachelor of arts with major in music emphasizes the liberal arts tradition. The program provides enough flexibility in electives for the student to meet other preprofessional requirements, and it thus may appeal to students whose professional goals do not terminate with music. The minimum requirement in music is 48 hours, including the following:

24 hours of comprehensive musicianship:

MUSIC 175	Styles II, Textures of Music	4
MUSIC 176	Styles III, Musical Styles of the Middle Ages & Renaissance	4
MUSIC 214	Styles IV, Musical Styles of the Baroque Period	4
MUSIC 215	Styles V, Music Styles of the Classical Period	4
MUSIC 406	Styles VI	4
MUSIC 407	Styles VII	4
	Performance	8
	History, theory, or composition	minimum 8

Recital attendance is required for seven semesters. (Transfer students' records will be evaluated.) The major program of music leading to the degree bachelor of arts may be elected in one of these three fields: music literature, music theory, or performance.

The music literature field requires eight hours of selected electives in music history and music literature. In addition, eight semester hours in a single performance area is required, of which half must be from the 400 level.

If the field is music theory, the program calls for MUSIC 503, 521 (three hours), 615, 616, three semester hours elected in music literature, and eight semester hours of piano, of which half must be from the 400 level.

If the field is performance, the program calls for MUSIC 615, 616 (music theory) plus 16 hours of an instrument or voice, of which half must be from the 400 level.

Participation in a music organization (instrumental or choral, depending on the major performance area) is required each semester, and the piano proficiency requirement must be passed before graduation.

The major in music in the bachelor of arts degree is not intended to prepare students to teach in the public schools in Kansas.

Requirements in general education are stated earlier in the College of Arts and Sciences section.

Bachelor of Music

128 hours required for graduation.

A four-year program in performance is offered with concentrations in voice, keyboard, strings, wind, or percussion instruments.

The basic requirements for the program in performance are these:

MUSIC 175	Styles II, Textures of Music	4
MUSIC 176	Styles III, Musical Styles of the Middle Ages & Renaissance	4
MUSIC 214	Styles IV, Musical Styles of the Baroque Period	4
MUSIC 215	Styles V, Music Styles of the Classical Period	4
MUSIC 406	Styles VI	4
MUSIC 407	Styles VII	4
MUSIC 473	Styles VIII	2
MUSIC 474	Styles IX	2
MUSIC 615	Canon & Fugue	2
MUSIC 616	Twentieth Century Counterpoint	2

Instrumental concentration students are required to take MUSIC 503, Instrumentation and Orchestration. Vocal concentration students must elect three additional hours in music; instrumental concentration, two hours. Requirements in general education are stated earlier in the College of Arts and Sciences section.

In the vocal program, 28 semester hours of voice, of which half must be from the 400 level, four semester hours of diction, four semester hours of piano, piano proficiency, and four semester hours of vocal ensemble and/or opera workshop are required.

In the instrumental program, 32 semester hours of the applied concentration instrument, of which half must be from the 400 level, four semester hours of instrumental ensemble and four semester hours of secondary performance are required. If a keyboard instrument is not the concentration, one must be chosen as a secondary performance area.

For the program in theory and composition, the basic courses in music for the instrumental concentration are required. In addition, the following courses are required: piano (eight hours), MUSIC 521, Composition (12 hours), MUSIC 631, Technology of the Electronic Music Studio, and MUSIC 632, Digital Sound Synthesis, (four hours), electives (five hours), general electives (42 hours).

Participation in a musical organization (instrumental or choral, depending on the concentration area) is required each semester. MUSIC 050, Recital Attendance, is required for seven semesters of the course. (Transfer students' records will be evaluated.)

Performance concentration students are required to present a half recital during the junior year and a full recital during the senior year.

Bachelor of Music Education

135-139 hours required for graduation, depending on option

The program of study leading to this degree is a nine-semester curriculum designed to prepare music teachers for grades K-12. With careful planning and enrollment during summer session(s) all requirements may be completed in four years. Within this curriculum there are three options—one leading to certification in vocal/choral music, another to certification in instrumental music, and a third which permits both instrumental and vocal certification.

The minimum requirements for this degree are 50 semester hours of general education, 17 semester hours of professional education plus student teaching, and 57 semester hours of music and music education. Specific requirements are stated earlier in the College of Arts and Sciences section.

General regulations for all applied study

Each student is required to perform at least once a semester either in a studio seminar or on a student recital.

As a part of performance requirements, studio and divisional seminars are held regularly as well as general student recitals. (Recital attendance policy is explained elsewhere.) Attendance at the seminars is mandatory. Unexcused absences will result in lowering the semester grade.

All private study for credit will culminate in a jury exam each term (summer included).

Each division faculty reserves and maintains the right to advise students to discontinue applied study in that particular curriculum if the students have not demonstrated the necessary degree of progress.

For specific divisional requirements, each student should request and receive a written copy of detailed divisional policies.

Required recital attendance

Attendance at a minimum of 15 recitals or concerts per semester for seven semesters is required for graduation. (Transfer students' records will be evaluated.)

Fees for private music lessons

University students enrolled in the Bachelor of Music, Bachelor of Music Education or the Bachelor of Arts in Music degrees with a major in music are exempt from fees for private music lessons and music practice facilities.

University students not majoring in one of the three music curricula may take private music instruction (pending availability of staff and facilities) by paying fees as listed in the general information section earlier in this catalog.

Graduate study

The Department of Music offers work leading to the Master of Music degree.

Admission to the graduate program normally requires a B.M., BME, B.S. in music, or B.A. in music, with curriculum substantially equivalent to that of this University. All entering students are encouraged to take the advanced music test of the Graduate Record Examinations.

Emphasis in the graduate program may be placed on music education, performance, pedagogy, theory and composition, or music history and literature. All areas of emphasis center around a common core of study, with ample flexibility for the development of personal interests. The degree requires a minimum of 32 hours, including a master's report (can be recital) or master's thesis. Students emphasizing music education may choose a 36-hour degree without report or thesis.

Details concerning the graduate program and opportunities for financial aid may be obtained by writing to the coordinator of graduate studies, Department of Music, McCain Auditorium, Manhattan, Kansas 66506.

Courses in music

Undergraduate credit

MUSIC 050. Recital Attendance. (0) I, II. MUSIC-050-0-0000

MUSIC 055. Seminar in Applied Music. (0) I, II, S. MUSIC-055-0-0000

MUSIC 060. Piano Proficiency. (0) I, II, S. Required for graduation of all music majors. MUSIC-060-2-1004

MUSIC 100. Music Fundamentals. (3) I, II, S. Elementary instruction in the Theory of Music. MUSIC-100-0-1004

MUSIC 150. Music Listening Laboratory. (1-2) I, II, S. A direct listening laboratory. Includes recorded musical works of all major periods and styles. Performances from the major university organizations, faculty artists, and special guests. Limited to non-music majors. MUSIC-150-1-1005

MUSIC 172. Styles I, Introduction to Musical Style. (3) I, II. The musical language and its relationship between mind and ear. Formation of interval, scale and chord patterns; basic notational procedures. Pr.: Consent of instructor. MUSIC-101-1-1004

MUSIC 175. Styles II, Textures of Music. (4) I, II, S. An introduction to musical elements and historical practice with emphasis on texture as a uniting force; stylistic procedures as applied to sound parameters by the major composers. Lec. and lab meets five hours a week. Pr.: MUSIC 172 or tested knowledge of basic Music Theory. MUSIC-175-1-1004

MUSIC 176. Styles III, Musical Styles of the Middle Ages and Renaissance. (4) I, II, S. An in-depth study of the early music; monody, organum, and modal counterpoint. Lec. and lab meets five hours a week. Pr.: MUSIC 175 (Textures of Music), or consent of instructor. MUSIC-176-1-1004

MUSIC 214. Styles IV, Musical Styles of the Baroque Period. (4) I, II. The beginnings of homophony as applied to a diatonic style. Procedures of harmonic counterpoint. Lec. and lab meets five hours a week. Pr.: MUSIC 176 or consent of instructor. MUSIC-214-1-1006

MUSIC 215. Styles V, Musical Styles of the Classical Period. (4) I, II. Common procedures of the late eighteenth century. Forms, modulatory procedures, basic orchestrational skills as applied to chamber ensembles. Lec. and lab meets five hours a week. Pr.: MUSIC 214 or consent of instructor. MUSIC-215-1-1006

MUSIC 232. Woodwind Techniques and Materials. (1) I, II, S. A beginning course designed to teach the fundamentals of playing and methods for teaching woodwind instruments. For music majors only, and not open to woodwind music majors. MUSIC-232-1-1004

MUSIC 233. Brass Techniques and Materials. (1) I, II, S. A beginning course designed to teach the fundamentals of playing and methods for teaching brass instruments. For music majors only, and not open to brass music majors. MUSIC-233-1-1004

MUSIC 234. String Techniques and Materials. (1) I, II, S. A beginning course designed to teach the fundamentals of playing and methods for teaching stringed instruments. For music majors only, and not open to string music majors. MUSIC-234-1-1004

MUSIC 235. Percussion Techniques and Materials. (1) I, II, S. The fundamentals of playing and methods of teaching percussion instruments. For music majors only, and not open to percussion music majors. MUSIC-235-1-1004

MUSIC 250. Introduction to Music. (3) I, II, S. Elements of music as represented in selected masterpieces of the standard concert repertory, designed to heighten the perception and the enjoyment of the listener who has limited musical knowledge. MUSIC-250-0-1005

MUSIC 285. Italian Diction. (1) I. Rules for pronouncing and translating Italian vocal texts. (One semester required of voice majors.) MUSIC-285-0-1004

MUSIC 287. German Diction. (1) I. Rules for pronouncing and translating German vocal texts. (One semester required of voice majors.) MUSIC-287-0-1004

MUSIC 310. History of Musical Instruments. (2). Offered on demand. The development of musical instruments in each period of Western Music. Pr.: MUSIC 150 or 250. MUSIC-310-0-1005

MUSIC 385. History of the American Popular Song. (2). Offered on demand. The vigor and musical inventiveness of this unique American Art form including the melodic, rhythmic, and harmonic aspects of the songs of Jerome Kern, Irving Berlin, George Gershwin, and others. Pr.: MUSIC 150 or MUSIC 250. MUSIC-385-0-1005

MUSIC 390. Special Studies in Music. (1-3) I, II, S. Pr.: Background of courses needed for studies undertaken. MUSIC-390-4-1004

MUSIC 391. Keyboard Pedagogy. (2) I, II, S. A systematic study of pedagogy which examines effective teaching methods and aids in the development of a philosophy of professional teaching. Pr.: Keyboard majors with conc. enrollment in Piano 450, Organ 446 or Harpsichord 443. MUSIC-391-3-1004

MUSIC 399. Honors Seminar. (3) II. On sufficient demand. Honors Seminar in Music for selected sophomores. MUSIC-399-1-1005

MUSIC 405. Music for Elementary Teachers. (3) I, II, S. The contribution of music to child development in elementary schools. A study of music literature suited to children through the development of purposive listening and the expressive phases of music including rhythmic response, singing, playing, reading, and writing. Pr.: Junior standing or consent of instructor. MUSIC-405-0-0832

MUSIC 406. Styles VI. (4) I, II, S. Musical style of the Romantic Period. Chromatic harmony and impressionistic devices. Orchestration as applied to the large ensemble. Lec. and lab. Pr.: MUSIC 215 or consent of instructor. MUSIC-406-1-1006

MUSIC 407. Styles VII. (4) I, II, S. Musical style of the Modern Period. Modern music; contemporary practice and aesthetics; polytonality, serial techniques, electronic music. Lec. and lab. Pr.: MUSIC 406 or consent of instructor. MUSIC-407-1-1006

MUSIC 412. Music in the Elementary Schools. (3) II. The music curriculum in elementary schools, including a study of the musical characteristics of children and materials and techniques for teaching music at this level. Pr.: Junior standing in music, or tested knowledge of music fundamentals and consent of instructor. MUSIC-412-0-0832

MUSIC 413. Music in Middle Level Schools. (2) I, II, S. Organization and content of the music program in grades 6-9, including a study of the musical characteristics of adolescents and materials and techniques for teaching music at this level. Pr.: MUSIC 412. MUSIC-413-0-0832

MUSIC 417. Conducting. (2) I, II, S. Techniques of the baton, gestures, signs, and cues as generally used in conducting choral and instrumental organizations. Includes essentials of technique and interpretation in both choral and instrumental types of ensemble performance. For music majors only. Required before admission to student teaching. Pr.: MUSIC 406. MUSIC-417-1-1004

MUSIC 420. History of Jazz. (3). On sufficient demand. Survey of jazz styles and personalities. For music majors and non-majors. Pr.: MUSIC 150, 250, or equiv. MUSIC-420-0-1005

MUSIC 422. A History of American Music. (3). Offered on sufficient demand. A survey of all aspects of American music and musical styles from the 17th century to the present, including the music of native Americans, and folk, popular and classical music of the 19th and 20th centuries. Pr. MUSIC 150 or 250. MUSIC-422-0-1006

MUSIC 424. Jazz in Kansas City and the Southwest. (Var. 2-3). Offered on sufficient demand. The history and development of jazz styles in Kansas City and the southwestern United States emphasizing the influence on styles of other geographic areas. Pr.: MUSIC 150. MUSIC-424-0-1005

MUSIC 425. Topics in Jazz. (Var.) Offered on demand. Big Bands; Jazz Pianists and Styles; Survey of Combo Jazz Styles, etc. Pr.: MUSIC 150. MUSIC-425-4-1004

MUSIC 427. Advanced String Techniques and Materials. (1-2) II. Playing and teaching skills beyond fundamentals and presentation of materials suitable for private and public school instruction at the secondary level. Required of all instrumental majors in Music Education. Pr.: MUSIC 234. MUSIC-427-1-1004

MUSIC 428. Advanced Woodwind Techniques and Materials. (1-2) II. Playing and teaching skills beyond fundamentals and presentation of materials suitable for private and public school instruction at the secondary level. Required of all instrumental majors in Music Education. Pr.: MUSIC 232. MUSIC-428-1-1004

MUSIC 429. Advanced Brass Techniques and Materials. (1-2). Playing and teaching skills beyond fundamentals and presentation of materials suitable for private and public school instruction at the secondary level. Required of all instrumental majors in Music Education. Pr.: MUSIC 233. MUSIC-429-1-1004

MUSIC 465. French Diction I. (1) I. Rules for pronouncing and translating French vocal texts. MUSIC-465-0-1004

MUSIC 467. French Diction II. (1) II. Rules for pronouncing and translating French vocal texts. Pr.: MUSIC 465. MUSIC-467-0-1004

MUSIC 470. Diatonic Harmony and the American Song. (3). Offered on demand. Composition of original small song forms including preparation of lead sheat and vocal score using guitar chord symbols. Pr.: MUSIC 100. For non-music majors only. MUSIC-470-0-1004

MUSIC 473. Styles VIII. (2) I, II, S. Seminar in Comprehensive Musicianship. A study of music technology and computer applications; popular and non-western styles. Pr.: MUSIC 407. Required for Music Education majors. MUSIC-473-1-1006

MUSIC 474. Styles IX. (2) I, II, S. Problems in Musical Style and Music Pedagogy. Individual projects relating to a specific style or pedagogical problem of the performance major or minor. Pr.: MUSIC 407. MUSIC-474-2-1004

MUSIC 492. Methods and Materials for the Studio. (2) I, II, S. Methods of teaching fundamental techniques; selection of teaching materials outlining courses of study. For undergraduate students in performance curricula. Taught in divisions according to the major. Practical application through supervised studio teaching. Pr.: MUSIC 391, or consent. MUSIC-492-2-1004

MUSIC 498. Honors Tutorial in Music. (1-3) I, II. Individual directed research and study of a topic in music, normally as a preliminary to writing a Senior Honors Thesis. May be repeated once to a total of three hours. Pr.: Sophomore standing, membership in the Honors Program of the College of Arts and Sciences and permission of the instructor. MUSIC-498-1-1005

MUSIC 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the Arts and Sciences Honors Program. MUSIC-499-1-1005

Undergraduate and graduate credit

MUSIC 501. Half Recital. (0) I, II, S. Public performance; vocal or instrumental with suggested performing time of 25 minutes. MUSIC-501-1-1004

MUSIC 502. Full Recital. (0) I, II, S. Public performance; vocal or instrumental with suggested performing time of 50 minutes. MUSIC-502-1-1004

MUSIC 503. Instrumentation and Orchestration. (3) II, S. Instruments of the band and orchestra studied with relation to range, function and tone color. Familiar and non-familiar compositions scored for ensembles, full orchestra, and full band. One hour lab a week as needed. Pr.: MUSIC (Theory) 406, consent of instructor. MUSIC-503-1-1004

MUSIC 513. The Choral Program in Secondary Schools. (3) I. Organization and administration of the comprehensive choral program in junior and senior high schools; including a study of voice-training methods, ensemble development, rehearsal techniques, and selection of repertoire. Pr.: Junior standing in music. MUSIC-513-0-0832

MUSIC 514. The Instrumental Program in Secondary Schools. (3) I. Organization and administration of the comprehensive instrumental music program in junior and senior high schools; including a study of ensemble development, rehearsal techniques, selection of repertoire, and marching band techniques. Pr.: Junior standing in music. MUSIC-514-0-0832

MUSIC 521. Composition. (Var.) I, II, S. Individual instruction in composition. Pr.: Consent of instructor. MUSIC-521-3-1004

MUSIC 555. Black Music of the Americas. (3) II. Black American music from its roots in Africa to the current styles. Emphasizing the cultural contexts in which it developed into such styles as VODUN, SHANGO, ARHOOLIES, WORK-SONGS, SHOUTS, SPIRITUALS, BLUES, JAZZ, SOUL, and RIGGAE. Offered jointly by Anthropology and Music. Same as ANTH 555. Pr.: Junior standing. MUSIC-555-0-1006

MUSIC 570. The Lyric Theater. (3). On sufficient demand. The history of operetta and music comedy from Offenbach to the present. Offered jointly by Departments of Music and Speech. MUSIC-570-0-1006

MUSIC 571. The Opera. (3). On sufficient demand. Survey of the history of the opera, with a review of a number of the most important operas. Course is designed for students majoring in curricula other than music. Offered jointly by the Departments of Music and Speech; same as SPCH 571. MUSIC-571-0-1006

MUSIC 601. Western Music before 1750. (2-3) I, alternate S. A survey of the development of Western music from early Greek civilization to 1750. Pr.: MUSIC 215. MUSIC-601-0-1006

MUSIC 602. Western Music from 1750 to the Present. (3) II, alternate S. The development of Western music from 1750 to the present. Pr.: MUSIC 215. MUSIC-602-0-1006

MUSIC 615. Canon and Fugue. (2) I, S. Counterpoint in 18th century style. Pr.: MUSIC 215, consent of instructor. MUSIC-615-0-1004

MUSIC 616. Twentieth-Century Counterpoint. (2) II, S. Contrapuntal devices used by twentieth-century composers; serial techniques. Pr.: MUSIC 215, consent of instructor. MUSIC-616-0-1004

MUSIC 631. Technology of the Electronic Music Studio. (2) I, S. Instrumentation and systematic procedures as applied to the construction of electronic music. Principles of voltage-controlled systems, synchronous tape machines, and audio mixing. Individual and team projects. Pr.: MUSIC 521, consent of instructor. MUSIC-631-0-1004

MUSIC 632. Digital Sound Synthesis. (2). On sufficient demand. Exploration of real-time interactive systems. Theory and application pertaining to the creation of instruments and scores using additive and FM techniques. Team projects. Pr.: MUSIC 631. MUSIC-632-3-1004

MUSIC 702. Style Analysis. (2-3). On sufficient demand. Training in a comprehensive, systematic analytical approach to all style periods, and in verbalizing analytical perceptions. Pr.: MUSIC 407. MUSIC-702-0-1004

MUSIC 704. Symphonic Literature. (3) II. The development of orchestral music from the late Baroque to the present, with emphasis on selected symphonies of the late eighteenth and nineteenth centuries. Pr.: MUSIC 407. MUSIC-704-0-1006

MUSIC 705. Chamber Music Literature. (3) II. In alternate years. A selected survey of masterpieces of small ensemble music from 1750 to the present. Special emphasis on the string quartet. Pr.: MUSIC 407. MUSIC-705-0-1006

MUSIC 706. Song Literature. (3) II. In alternate years. Survey, by historical period and national style, of major solo vocal works. Pr.: MUSIC 407. MUSIC-706-0-1006

MUSIC 708. Choral Literature. (3) II. In alternate years. A study of standard choral masterpieces in both large and small forms from 1450 to the present. Pr.: MUSIC 407. MUSIC-708-0-1006

MUSIC 711. Practical Composition and Arranging. (2). On sufficient demand. Explanation of styles and techniques applicable to contemporary commercial music. Practical arranging for the stage band. Pr.: MUSIC 215 or consent of instructor. MUSIC-711-0-1004

MUSIC 714. Advanced Orchestration. (2). On sufficient demand. The study of orchestra and band scores. Exercises in orchestrating this type of music for different choirs of instruments, as well as scoring for full orchestra and symphonic band. Pr.: MUSIC 503 or consent of instructor. MUSIC-714-0-1004

MUSIC 731. Marching Band and Stage Band Techniques. (3) S. Show ideas and organization, music selection, rehearsal techniques, organization, and administration of the marching band and stage band. Pr.: Nine hours credit in music education. MUSIC-731-1-0832

MUSIC 737. Organ Literature. (3) II. In alternate years. A survey of significant compositions from the Renaissance to the present, with emphasis on performance practice. Pr.: MUSIC 407. MUSIC-737-0-1006

MUSIC 738. Piano Literature. (3) I. In alternate years. Selective survey of music for piano from 1750 to the present. Pr.: MUSIC 407. MUSIC-738-0-1006

MUSIC 765. Music of the Twentieth Century. (3) II. The historical aspect in musical analysis of composition since the Romantic period. Pr.: MUSIC 407. MUSIC-765-0-1006

MUSIC 766. Seminar in the Life and Works of an Individual Composer. (3) I. Sudy of the career and achievements of a selected composer of major stature. Pr.: MUSIC 407. MUSIC-766-0-1006

MUSIC 770. Advanced Studies in Elementary School Music. (2-3). On sufficient demand. Individual and small group studies of special problems in the teaching of music to children. Pr.: Nine hours credit in music education. MUSIC-770-0-0832

MUSIC 772. Advanced Studies in Secondary School General Music. (2-3). On sufficient demand. Individual and small group studies of special problems in teaching music classes in grades 7-12. Pr.: Nine hours credit in music education. MUSIC-772-0-0832

MUSIC 774. Advanced Studies in Secondary School Choral Music. (2-3). On sufficient demand. An intensive study of the training of choral ensembles in secondary schools, with particular emphasis on tone production, expressive singing, diction, rehearsal, and performance techniques. Pr.: Nine hours credit in music education. MUSIC-774-0-0832

MUSIC 776. Advanced Studies in Secondary School Instrumental Music. (2-3). On sufficient demand. Individual and small group studies of special problems in the training of instrumental ensembles in grades 7-12. Pr.: Nine hours credit in music education. MUSIC-776-0-0832

MUSIC 799. Problems in Music. (Var.) I, II, S. Individual guided work in a selected area. Pr.: Six hours graduate credit in music. MUSIC-799-4-1004

Graduate credit

MUSIC 801. Introduction to Graduate Study in Music. (2) I, S. Library procedures, bibliography, research methods, and practice in preparing scholarly papers. Required of all graduate students in music. Pr.: At least 30 hours of Music Theory and Music History. MUSIC-801-0-1006

MUSIC 802. Seminar in Music Theory. (3) I, alternate S. Comparison of major theoretical treatises and historical compositional practices; practical application for the modern musician. Pr.: Twenty hours music theory. MUSIC-802-0-1004

MUSIC 803. Seminar in Music History. (2) S. The history of music with emphasis on the correlation of stylistic factors and man's cultural environment. Pr.: MUSIC 407. MUSIC-803-0-1006

MUSIC 804. Advanced Analysis. (3) In alternate S. An in-depth study of works by later Romantic and Modern composers: techniques and styles in relation to form. Pr.: Twenty hours music theory. MUSIC-804-0-1004

MUSIC 805. Theories of Music Teaching. (3). On sufficient demand. A survey of the history of music teaching in the United States, with emphasis on the relationship of various theories of music, musical perception, and musical cognition to current practices in teaching music at all levels. MUSIC-805-0-0832

MUSIC 806. Foundations of Music Education I. (3). On sufficient demand. Survey of the development of school music in the United States, and the study of basic concepts in aesthetics and curriculum theory as sources of principles in music education at all levels. Pr.: Nine hours credit in music education. MUSIC-806-0-0832

MUSIC 807. Foundations of Music Education II. (3). On sufficient demand. A study of basic concepts in the psychology of music and learning theory as sources of principles in music education, and an introduction to experimental research in music teaching. Pr.: Nine hours credit in music education. MUSIC-807-0-0832

MUSIC 828. Methods and Materials for the Studio. (Var. 1-3) I, II, S. Methods of teaching fundamental techniques; selection of teaching materials outlining courses of study. For graduate students in performance curricula. Taught in divisions according to the major. Practical application through supervised studio teaching. Pr.: MUSIC 391 or MUSIC 492. May be repeated for a maximum of three hours. MUSIC-828-2-1004

MUSIC 830. Seminar in Medieval and Renaissance Music. (3) II. In-depth investigation of a selected area or problem in medieval or Renaissance music. Emphasis on individual research. Pr.: MUSIC 601, and consent of instructor. MUSIC-830-0-1006

MUSIC 832. Seminar in Baroque Music. (3) I. In-depth investigation of a selected area or problem in Baroque music. Emphasis on individual research. Pr.: MUSIC 601, and consent of instructor. MUSIC-832-0-1006

MUSIC 834. Seminar in Classical Music. (3) II. In-depth investigation of a selected area or problem in Classical music. Emphasis on individual research. Pr.: MUSIC 602, consent of instructor. MUSIC-834-0-1006

MUSIC 836. Seminar in Romantic Music. (3) I. In-depth investigation of a selected area or problem in Romantic music. Emphasis on individual research. Pr.: MUSIC 602, consent of instructor. MUSIC-836-0-1006

MUSIC 857. Advanced Composition. (Var.) I, II, S. Individual instruction in composition. Pr.: MUSIC 521 and consent of instructor. MUSIC-857-3-1004

MUSIC 859. Advanced Conducting. (Var.) I, II, S. MUSIC-859-3-1004

MUSIC 885. Advanced Diction. (1). On sufficient demand. Concentrated study of Italian, German, and French Diction for singing. Materials are related to work in the voice studio, and concurrent registration in MUSIC 886 is required. Pr.: MUSIC 466. May be repeated once. MUSIC-885-0-1004

MUSIC 898. Master's Report in Music. (2) I, II, S. Independent directed research leading to Master's Report. Pr.: Sixteen hours graduate credit in music. MUSIC-898-1-1006

MUSIC 899. Research in Music. (Var.) I, II, S. Independent research that may lead to Master's Thesis. Pr.: Sixteen hours graduate credit in music. MUSIC-899-4-1006

Workshops in music

Undergraduate credit

MUSIC 489. Workshop in Music. (1-2) S. Specialized interest areas for undergraduate students only. Pr.: Consent of instructor. MUSIC-489-2-0832

Graduate credit

MUSIC 812. Workshop in Service Playing for the Church Organist. (Var. 1-2) S. The church organist in service playing including liturgy, hymn playing, accompanying, repertoire, and registration for both pipe and electronic organs. MUSIC-812-2-0832

MUSIC 813. Workshop: American Symposium for Choral Music. (Var. 1-2) S. MUSIC-813-2-0832

MUSIC 814. Workshop in Music. (Var. 1-2) S. Studies in specialized interest areas. Techniques and interpretations of styles of the various periods of music. MUSIC-814-2-0832

MUSIC 815. Workshop in Percussion Instruments. (Var. 1-2) S. Survey and demonstration of the methods, materials and teaching techniques of percussion instruments. MUSIC-815-2-0832

MUSIC 816. Workshop in Woodwind Instruments. (Var. 1-2) S. Survey and demonstration of the methods, materials, and teaching techniques of woodwind instruments. MUSIC-816-2-0832

MUSIC 817. Workshop in Brass Instruments. (Var. 1-2) S. Survey and demonstration of the methods, materials, and teaching techniques of brass instruments. MUSIC-817-2-0832

MUSIC 818. Workshop in Stringed Instruments. (Var. 1-2) S. Survey and demonstration of the methods, materials, and teaching techniques of stringed instruments. MUSIC-818-2-0832

MUSIC 819. Workshop in Electronic Music. (Var. 1-2) S. A practical and non-technical explanation of synthesizers, synchronous tape recorders, and audio mixing devices. Applications for the classroom. Pr.: Consent of instructor. MUSIC-819-2-0832

MUSIC 820. Workshop in Marching Band. (Var. 1-2) S. Survey of the methods, materials, and the teaching techniques of the marching band. MUSIC-820-2-0832

MUSIC 821. Workshop in Junior High School Vocal Music. (Var. 1-2) S. Survey of the methods, materials, and the teaching techniques of vocal music for the junior high school. MUSIC-821-2-0832

MUSIC 822. Workshop in Elementary Music. (Var. 1-2) S. Organizing old and new materials for various levels of elementary music, correlation of academic subjects with the music program. MUSIC-822-2-0832

MUSIC 823. Workshop in Choral Music. (Var. 1-2) S. Choral techniques and interpretation of Baroque, Classical, Romantic, and Modern styles. MUSIC-823-2-0832

MUSIC 824. Workshop in Instrumental Music. (Var. 1-2) S. Teaching techniques, methods, and materials for woodwind, brass, string, and percussion sections of bands and orchestras. MUSIC-824-2-0832

MUSIC 825. Workshop in Piano Pedagogy. (Var. 1-2) S. Methods, materials, and teaching techniques for all grade levels. MUSIC-825-2-0832

MUSIC 826. Workshop in Jazz Ensemble Techniques. (Var. 1-2) S. Methods, materials, and improvisational techniques for teaching Jazz in the public schools. MUSIC-826-2-0832

Performance organizations
Undergraduate credit

MUSIC 111. Concert Choir. (1) I, II. Admission by audition. MUSIC-111-5-1004

MUSIC 115. Marching Band. (1) I. Marching band during fall semester: performs for athletic and University events. Admission by audition. MUSIC-115-5-1004

MUSIC 116. Concert Band. (1) II. Open to all interested wind and percussion performers without audition. MUSIC-116-5-1004

MUSIC 117. Symphonic Wind Ensemble. (1) I, II, S. A select performing organization. Admission by audition. MUSIC-117-5-1004

MUSIC 120. Chamber Singers. (1) I, II, S. Admission by audition. MUSIC-120-5-1004

MUSIC 121. Collegiate Chorale. (1) I, II, S. Open to all interested singers. Audition determines membership in other choral organizations. MUSIC-121-5-1004

MUSIC 125. K-State Singers. (1) I, II. Admission by audition. (Not open to Music majors.) MUSIC-125-5-1004

MUSIC 130. Symphony Orchestra. (1) I, II, S. Admission by audition. MUSIC-130-5-1004

MUSIC 131. Theatre Orchestra. (1) I, II. Admission by audition. MUSIC-131-5-1004

MUSIC 135. Men's Glee Club. (1) I, II. Admission by audition. MUSIC-135-5-1004

MUSIC 140. Women's Glee Club. (1) I, II. Admission by audition. MUSIC-140-5-1004

MUSIC 288. Instrumental Ensemble. (1) I, II, S. Elective for selected students. MUSIC-288-5-1004

MUSIC 289. Concert Jazz Ensemble. (1) I, II, S. Admission by audition. MUSIC-289-5-1004

MUSIC 290. Vocal Ensemble. (1) I, II, S. Elective for selected students. MUSIC-290-5-1004

MUSIC 292. Jazz Instrumental Ensemble. (1) I, II, S. MUSIC-292-5-1004

MUSIC 293. String Ensemble. (1) I, II, S. MUSIC-293-5-1004

MUSIC 294. Brass Ensemble. (1) I, II, S. MUSIC-294-5-1004

MUSIC 295. Wind Ensemble. (1) I, II, S. MUSIC-295-5-1004

MUSIC 296. Jazz Lab A. (1) I, II. Elective for selected students. MUSIC-296-5-1004

MUSIC 297. Jazz Lab B. (1) I, II. Elective for selected students. MUSIC-297-5-1004

MUSIC 350. Studio Accompanying. (1). On sufficient demand. Piano student assigned to studio instructor. Accompanies lessons for at least two hours per week. Ensemble credit for pianists. Pr.: Consent of instructor. MUSIC-350-1-1004

MUSIC 351. Recital Accompanying. (1). On sufficient demand. Piano student assigned to a music major preparing for graduation recital. Pianist accompanies student in lessons and presents the formal public program as course requirement. Pr.: Consent of instructor. MUSIC-351-1-1004

MUSIC 400. Concert Choir. (1) I, II. Admission by audition. MUSIC-400-5-1004

MUSIC 401. Concert Band. (1) I, II, S. Open to all interested wind and percussion performers without audition. MUSIC-401-5-1004

MUSIC 402. Symphonic Wind Ensemble. (1) I, II. A select performing organization. Admission by audition. MUSIC-402-5-1004

MUSIC 403. Collegiate Chorale. (1) I, II, S. Open to all interested singers. Audition determines membership in other choral organizations. MUSIC-403-5-1004

MUSIC 404. Symphony Orchestra. (1) I, II, S. Admission by audition. MUSIC-404-5-1004

MUSIC 408. Men's Glee Club. (1) I, II. Admission by audition. MUSIC-408-5-1004

MUSIC 409. Women's Glee Club. (1) I, II. Admission by audition. MUSIC-409-5-1004

MUSIC 410. Concert Jazz Ensemble. (1) I, II, S. Admission by audition. MUSIC-410-5-1004

MUSIC 411. Marching Band. (1) I. Admission by audition. MUSIC-411-5-1004

MUSIC 414. Theatre Orchestra. (1) I, II. Admission by audition. MUSIC-414-5-1004

MUSIC 415. Chamber Singers. (1) I, II, S. Admission by audition. MUSIC-415-5-1004

MUSIC 418. Jazz Lab A. (1) I, II. Elective for selected students. MUSIC-418-5-1004

MUSIC 419. Jazz Lab B. (1) I, II. Elective for selected students. MUSIC-419-5-1004

MUSIC 475. Opera Workshop. (Var.) I, II, S. Principles and techniques of operatic and musical theatre production, with emphasis on class rehearsal and performance of selected scenes from opera and musical drama; brief survey of the history of opera. Offered jointly by the Department of Music and Speech. Vocal Ensemble credit may be earned in this course. Same as SPCH 475. MUSIC-475-1-1004

MUSIC 490. Collegium Musicum. (1) I, II, S. An ensemble devoted primarily to the performance of music written before 1700. Authentic instruments used when possible. Pr.: Consent of instructor. MUSIC-490-5-1004

Graduate credit

MUSIC 838. Opera Workshop. (Var.) I, II, S. Opera workshop for graduates. MUSIC-838-1-1004

MUSIC 839. Vocal Ensemble. (1) I, II, S. Performance and study with established University vocal organization or small ensemble. MUSIC-839-5-1004

MUSIC 840. Instrumental Ensemble. (1) I, II, S. Performance and study with an established university instrumental organization or in a small ensemble. MUSIC-840-5-1004

MUSIC 841. Collegium Musicum. (1) I, II, S. An ensemble devoted primarily to the performance of music written before 1700. Authentic instruments used when possible. MUSIC-841-5-1004

MUSIC 842. Concert Choir. (1) I, II. Pr.: Baccalaureate degree and previous experience at the undergraduate level. MUSIC-842-5-1004

MUSIC 843. Symphony Orchestra. (1) I, II. Pr.: Baccalaureate degree and previous experience at the undergraduate level. MUSIC-843-5-1005

MUSIC 844. Concert Jazz Ensemble. (1) I, II, S. Pr.: Baccalaureate degree and previous experience at the undergraduate level. MUSIC-844-5-1005

MUSIC 845. Symphonic Wind Ensemble. (1) I, II, S. Pr.: Baccalaureate degree and previous experience at the undergraduate level. MUSIC-845-5-1005

Performance areas

Undergraduate credit

MUSIC 203. Voice Class I. (1) I, II. Not for Voice Majors. MUSIC-203-1-1004

MUSIC 204. Voice Class II. (1) I, II. Not for Voice Majors. MUSIC-204-1-1004

MUSIC 206. Piano Class I. (1) I, II, S. For freshmen and transfer music students with no piano background. Sections also available for non-music majors and non-degree students. MUSIC-206-1-1004

MUSIC 207. Piano Class II. (1) I, II, S. For freshmen and transfer students with some piano background, as well as those who have failed some or all of the Piano Proficiency Exam. MUSIC-207-1-1004

MUSIC 210. Voice Class III. (1) I, II. Not for Voice Majors. MUSIC-210-1-1004

MUSIC 211. Voice Class IV. (1) I, II. Not for Voice Majors. MUSIC-211-1-1004

MUSIC 251. Pre-performance Study. (Var.) I, II, S. For students who do not meet standards for regular performance study. MUSIC-251-3-1004

The following undergraduate courses in performance are offered each semester and summer. The student may earn one to four hours per semester, with a maximum of sixteen hours in any one applicable to a degree.

Lower-level performance (freshman-sophomore)
MUSIC 252. Baritone. MUSIC-252-3-1004
MUSIC 254. Bassoon. MUSIC-254-3-1004
MUSIC 256. Clarinet. MUSIC-256-3-1004
MUSIC 258. Double Bass. MUSIC-258-3-1004
MUSIC 259. Early Winds. (1-2). MUSIC-259-3-1004
MUSIC 260. Flute. MUSIC-260-3-1004
MUSIC 262. French Horn. MUSIC-262-3-1004
MUSIC 263. Harpsichord. MUSIC-263-3-1004
MUSIC 264. Oboe. MUSIC-264-3-1004
MUSIC 266. Organ. MUSIC-266-3-1004
MUSIC 267. Harp. MUSIC-267-3-1004
MUSIC 268. Percussion. MUSIC-268-3-1004
MUSIC 270. Piano. MUSIC-270-3-1004
MUSIC 272. Saxophone. MUSIC-272-3-1004
MUSIC 275. Trombone. MUSIC-275-3-1004
MUSIC 276. Trumpet. MUSIC-276-3-1004
MUSIC 278. Tuba. MUSIC-278-3-1004
MUSIC 280. Viola. MUSIC-280-3-1004
MUSIC 281. Viola Da Gamba. (1-2). MUSIC-281-3-1004
MUSIC 282. Violin. MUSIC-282-3-1004
MUSIC 284. Violoncello. MUSIC-284-3-1004
MUSIC 286. Voice. MUSIC-286-3-1004

Upper-level performance
MUSIC 306. Voice Class V. (1) I, II. Not for voice majors. MUSIC-306-1-1004
MUSIC 307. Voice Class VI. (1) I, II. Not for voice majors. MUSIC-307-1-1004
MUSIC 432. Baritone. MUSIC-432-3-1004
MUSIC 434. Bassoon. MUSIC-434-3-1004
MUSIC 436. Clarinet. MUSIC-436-3-1004
MUSIC 438. Double Bass. MUSIC-438-3-1004
MUSIC 439. Early Winds. (1-2). MUSIC-439-3-1004
MUSIC 440. Flute. MUSIC-440-3-1004
MUSIC 442. French Horn. MUSIC-442-3-1004
MUSIC 443. Harpsichord. MUSIC-443-3-1004
MUSIC 444. Oboe. MUSIC-444-3-1004
MUSIC 446. Organ. MUSIC-446-3-1004
MUSIC 447. Harp. MUSIC-447-3-1004
MUSIC 448. Percussion. MUSIC-448-3-1004
MUSIC 450. Piano. MUSIC-450-3-1004
MUSIC 452. Saxophone. MUSIC-452-3-1004
MUSIC 454. Trombone. MUSIC-454-3-1004
MUSIC 456. Trumpet. MUSIC-456-3-1004
MUSIC 458. Tuba. MUSIC-458-3-1004
MUSIC 459. Viola Da Gamba. (1-2). MUSIC-459-3-1004
MUSIC 460. Viola. MUSIC-460-3-1004
MUSIC 462. Violin. MUSIC-462-3-1004
MUSIC 464. Violoncello. MUSIC-464-3-1004
MUSIC 466. Voice. MUSIC-466-3-1004

MUSIC 480. Voice Class VII. (1) I. Not for voice majors. This class is accompanying in a voice studio for piano majors (voice option). Pr.: MUSIC 307. MUSIC-480-1-1004

MUSIC 482. Voice Class VIII. (1) II. Not for voice majors. This class is accompanying in a voice studio for piano majors (voice option). Pr.: MUSIC 480. MUSIC-482-1-1004

Undergraduate and graduate credit

MUSIC 641. Secondary Performance Area. (1-2). For graduate students who wish to study an instrument (or voice) other than the major performance area. Pedagogical methods and fundamentals are stressed. MUSIC-641-3-1004

Graduate credit

MUSIC 852. Baritone. MUSIC-852-3-1004
MUSIC 854. Bassoon. MUSIC-854-3-1004
MUSIC 856. Clarinet. MUSIC-856-3-1004
MUSIC 858. Double Bass. MUSIC-858-3-1004
MUSIC 860. Flute. MUSIC-860-3-1004
MUSIC 862. French Horn. MUSIC-862-3-1004
MUSIC 863. Harpsichord. MUSIC-863-3-1004
MUSIC 864. Oboe. MUSIC-864-3-1004
MUSIC 866. Organ. MUSIC-866-3-1004
MUSIC 868. Percussion. MUSIC-868-3-1004
MUSIC 870. Piano. MUSIC-870-3-1004
MUSIC 872. Saxophone. MUSIC-872-3-1004
MUSIC 875. Trombone. MUSIC-875-3-1004
MUSIC 876. Trumpet. MUSIC-876-3-1004
MUSIC 878. Tuba. MUSIC-878-3-1004
MUSIC 880. Viola. MUSIC-880-3-1004
MUSIC 881. Viola Da Gamba. (1-2). MUSIC-881-3-1004
MUSIC 882. Violin. MUSIC-882-3-1004
MUSIC 884. Violoncello. MUSIC-884-3-1004
MUSIC 886. Voice. MUSIC-886-3-1004
MUSIC 887. Early Winds. (1-2). MUSIC-887-3-1004

Philosophy

Charles E. Reagan, head of department

Professors Reagan* and Tilghman;* Associate Professors Exdell,* Hamilton,* Scheer,* and Smith;* Assistant Professor O'Neil; Emeritus: Professor Miller.*

Philosophy is the study of the intellectual foundations of virtually every area of human thought and endeavor. Over the centuries philosophers have examined, for example, the nature and justification of moral values, religious and scientific explanations of the world, the rationality of social institutions, and the nature of reasoning and argument. The program in philosophy is designed to give students an understanding of traditional philosophical subjects such as these. It is also aimed at helping students develop critical habits of thinking and skill in understanding complex issues. Consequently, philosophy is an appropriate subject around which to organize a general education for any purpose.

Undergraduate study

The Department of Philosophy offers a variety of options within the major program to provide flexibility in organizing a course of studies with philosophy at its center. In addition to the traditional major in philosophy there are: pre-professional options designed to meet the special needs of students aiming for careers in law, business, and the ministry; and the interdisciplinary option that gives students whose interests do not coincide with traditional disciplinary lines the opportunity to design a course of study that fits their special concerns.

All philosophy students are required to take the core curriculum:

One course in logic:

PHILO 110	Introduction to Formal Logic	3
	or	
PHILO 220	Symbolic Logic I	3
	or	
PHILO 510	Symbolic Logic II	3
	and	
PHILO 300	History of Ancient Philosophy	3
PHILO 301	History of Modern Philosophy	3
PHILO 555	Ethical Theories	3

Traditional philosophy option (B.A. only)

This option is for students who are interested in a traditional liberal arts course of study or who desire to do graduate study in philosophy. Thirty-six hours in philosophy are required including: the core curriculum (the logic course must be PHILO 220, Symbolic Logic I); and 24 additional hours in philosophy, of which 18 must be at or above the 400 level.

Philosophy: pre-law (B.A. or B.S.)

While no one major emphasis in college is given preference by law school admission boards, law schools recognize the value of philosophy for refining skills in expression, comprehension, and critical thinking. According to the *Pre-Law Handbook*, "The free and spirited consideration of philosophical questions is almost the model for legal training."

The philosophy department requires that students have a well-balanced curriculum in other areas suitable as preparation for law school, including the social sciences, history, and literature. In addition to the college requirements for either the B.A. or B.S. degree, students must take 27 hours of philosophy, including: core curriculum; and fifteen additional hours at or above the 400 level including PHILO 535, Philosophy of Law, and either PHILO 500, Philosophy of Social Science, or PHILO 525, Social and Political Philosophy.

Philosophy: pre-business (B.A. or B.S.)

The pre-business option in philosophy is designed for the student who plans to do further work in a college of business leading to a master's in business administration (MBA). This program has been developed in accordance with the results of a number of surveys in professional business journals which rate this type of program an excellent preparation for a career in business leadership. The following curriculum meets the admission requirements of Kansas State University's MBA program:

Requirements for admission to the MBA program, see College of Business Administration section of this catalog. Courses which satisfy these requirements will also partially satisfy requirements for the B.A. and B.S. degrees in the College of Arts and Sciences.

Philosophy, 24 hours, including: core curriculum; and twelve additional hours in philosophy at or above the 400 level, including PHILO 545, Philosophy of Economics, and either PHILO 525, Social and Political Philosophy, or PHILO 535, Philosophy of Law.

Philosophy: pre-ministry (B.A. only)

The pre-ministry option in philosophy is a non-sectarian program designed for students who are interested in the religious ministry as a profession. Students will be advised on courses in psychology, sociology, and literature which satisfy the general college requirements and are recommended by most American schools of theology. The requirements are as follows:

Philosophy, 30 hours, including: core curriculum; PHILO 310, Comparative Religion; and fifteen additional hours in philosophy at or above the 400 level, including PHILO 515, Philosophy of Religion, and PHILO 540, Metaphysics.

Three courses in other disciplines, approved by the department, in which religion is studied.

Interdisciplinary options (B.A. or B.S.)

These options permit students to combine a philosophy major with a concentration of studies in some other general area. There are no specific limitations of the area of study; it does not, for example, have to fall within a single department. However, it should encompass a group of courses with some underlying theme. Typical interdisciplinary areas of concentration are the various social sciences, history, the life sciences and natural sciences, psychology, journalism, language and literature, art and design, mathematics, and linguistics. Students develop their programs in consultation with a faculty member of the philosophy department. All programs must be approved by the department. The general requirements are as follows: 12 hours in the area of the program at or above the 400 level; and 24 hours in philosophy.

Courses in philosophy

Undergraduate credit

PHILO 100. Introduction to Philosophical Problems. (3) I, II, S. An introduction to some of the main problems of philosophy such as the nature of morality, knowledge, mind and body, political authority, and the existence of God. PHILO-100-0-1509

PHILO 105. Introduction to Critical Thinking. (3) I, II, S. The various forms of arguments and persuasion are analyzed in order to develop the student's ability to distinguish between sound and fallacious reasoning. Particular attention is paid to advertising, editorial writing, and political reasoning. PHILO-105-0-1509

PHILO 110. Introduction to Formal Logic. (3) I, II, S. An elementary investigation of the concept of arguments introducing the basic symbolic techniques of contemporary logic. The presentation is at a more elementary level than that of Symbolic Logic I. PHILO-110-0-1509

PHILO 115. Introduction to Philosophy of Religion. (3) I, II, S. Raises the philosophical problems of the meaning of religious language, the existence and nature of God, the distinction between reason and faith, between knowledge and belief, and between revelation and science. PHILO-115-0-1509

PHILO 120. Introduction to the Philosophy of Art and Literature. (3) I, II, S. An introduction to philosophical problems concerning the concept of art, aesthetic value, and art appreciation and criticism. For students of art, architecture, literature, music, and theater. PHILO-120-0-1509

PHILO 125. Introduction to Philosophy of Science. (3) I, II, S. Examines the nature of science, how it differs from pseudo-sciences such as astrology and raises questions about the nature of reality and social value of science. PHILO-125-0-1509

PHILO 130. Introduction to Ethics. (3) I, II, S. Examines the nature of morality, moral knowledge and moral justifications, and the relation between morality, religion, and culture. These issues are approached through a study of contemporary moral problems concerning abortion, war, sexuality, etc. PHILO-130-0-1509

PHILO 135. Introduction to Social and Political Philosophy. (3) I, II, S. Examines the concepts of justice, the ideal society and the relation between the state and the individual. Classical and contemporary views on civil disobedience, the enforcement of morals, punishment, and the relation between politics and economics are discussed. PHILO-135-0-1509

PHILO 140. Introduction to Philosophy of Mind. (3) I, II, S. Examines problems about the relation between mind and body, the existence of a "soul," the concepts of "insanity" and "the unconscious," parapsychology, and major schools of modern psychology such as behaviorism, Freudianism, and existentialist psychiatry. PHILO-140-0-1509

PHILO 145. Introduction to Philosophical Classics. (3) I, II, S. An introduction to philosophy through the careful reading of selected works of a major influence in the history of philosophy. PHILO-145-0-1509

PHILO 215. Honors Introduction to Philosophy. (3) I, II. An introduction to the main problems in philosophy. For students in the Honors Program. PHILO-215-0-1509

PHILO 220. Symbolic Logic I. (3) I, II, S. A systematic introduction to modern logic. Truth-functions, truth tables, and calculus of propositions, classes and relations. PHILO-220-0-1509

PHILO 300. History of Ancient Philosophy. (3) I. The development of philosophical ideas in the West through the medieval period, with special emphasis on ancient Greek philosophy. PHILO-300-0-1509

PHILO 301. History of Modern Philosophy. (3) II. The development of philosophical ideas from the Renaissance to the nineteenth century. PHILO-301-0-1509

PHILO 310. Comparative Religion. (3) II. An introduction to the central beliefs of the major religions of both East and West and an examination of philosophical problems that arise in the comparative study of religions (for example, the problems of the relativity of religious belief). Pr.: One course in philosophy. PHILO-310-0-1509

PHILO 397. Experimental Studies in Philosophy. (1-6) I, II. Experimental and interdisciplinary studies in philosophy. Topics selected in consultation with instructor. Pr.: Permission of instructor. PHILO-397-0-1509

PHILO 399. Honors Seminar in Philosophy. (3) I, 1979. PHILO-399-0-4900

PHILO 499. Senior Honors Thesis. (2) I, II, S. Open only to honor students in the Arts and Sciences Honors Program. PHILO-499-4-1509

Undergraduate and graduate credit in minor field

PHILO 500. Philosophy of the Social Sciences. (3) II. An examination of the possibility of a science of man and of specific issues in the social sciences such as models and measurement, reduction, functional analysis, ideal types and axiomatization. For students in sociology, anthropology, political science, psychology, geography, and history. Pr.: One course in philosophy. PHILO-500-0-1509

PHILO 505. The Philosophy of Science. (3) I or II. Philosophical problems concerning science, its methods, laws, and theories. Pr.: One course in philosophy. PHILO-505-0-1509

PHILO 510. Symbolic Logic II. (3) I. An advanced study of logical systems and problems in logical theory. Pr.: PHILO 220. PHILO-510-0-1509

PHILO 515. Philosophy of Religion. (3) II. A course designed to examine philosophically the basic concepts of religion, e.g., truth and faith, God and atheism, reason and revelation, morality and religion, evil, man, sin, salvation, eschatology. Pr.: One course in philosophy or consent of instructor. PHILO-515-0-1509

PHILO 520. The Philosophy of Mind. (3) I. The philosophy of psychology. An examination of philosophical problems about such psychological concepts as mind, consciousness, thinking, emotion, and dreaming. Pr.: One course in philosophy. PHILO-520-0-1509

PHILO 525. Social-Political Philosophy. (3) I or II and alternate S. A combined systematic and historical examination of social and political philosophy from antiquity to the present. Pr.: One course in philosophy or consent of instructor. PHILO-525-0-1509

PHILO 530. Epistemology. (3) I. An examination of philosophical problems about the nature of our knowledge of the world. Pr.: One course in philosophy. PHILO-530-0-1509

PHILO 535. Philosophy of Law. (3) I or II. A study of problems about the nature of legal reasoning, relationship between law and morality, and the justification of legal punishment. PHILO-535-0-1509

PHILO 540. Metaphysics. (3) II. A critical examination of theories about things and their qualities, causality, space, and time. Both traditional and contemporary sources will be used, but emphasis will be placed on the latter. Pr.: One course in philosophy. PHILO-540-0-1509

PHILO 545. Philosophy of Economics. (3) I, II. An examination of the moral and conceptual foundations of modern economic systems. Considers such topics as the relations between "economics rationality" and the quality of life, the just distribution of wealth, the nature of property rights, and the value of technology in society. Pr.: One course in Philosophy or one course in social science. PHILO-545-0-1509

PHILO 550. The Philosophy of Language. (3) I or II. Philosophical problems concerning the nature of language and such concepts as meaning and truth. Pr.: One course in philosophy. PHILO-550-0-1509

PHILO 555. Ethical Theories. (3) I or II. A systematic survey of the major literature of moral philosophy, e.g., Plato, Aristotle, Hobbes, Hume, Kant, Mill, Moore, Prichard. Pr.: One course in philosophy. PHILO-555-0-1509

PHILO 560. Advanced Ethics. (3) I or II. In alternate years. Detailed examination of selected topics in contemporary ethical theory. Pr.: PHILO 130 or junior standing. PHILO-560-0-1509

PHILO 565. Medical Ethics. (3) I, II. A detailed examination of selected moral issues which confront the medical professional and of the main points of the Hippocratic Oath. Topics frequently dealt with include: experimentation on human subjects, informed consent, abortion, euthanasia, conflict of interest, confidentiality of patients' records and conversation. Pr.: Junior standing. PHILO-565-0-1509

PHILO 570. Recent Aesthetic Theory. (3) II. A study of selected work of current importance in the philosophy of art. Pr.: PHILO 120. PHILO-570-0-1509

PHILO 575. Philosophy in Literature. (3) I or II. An examination of philosophical ideas encountered in selected writings of the world's great poets, novelists, essayists. Pr.: One course in philosophy and one in literature. PHILO-575-0-1509

PHILO 580. Existentialism. (3) I or II. A study of prominent thinkers in the existentialist tradition. Pr.: One course in philosophy or permission of instructor. PHILO-580-0-1509

Undergraduate and graduate credit

PHILO 600. Studies in Ancient Philosophy. (3) I. A detailed study of a selected philosopher or movement in the history of Greek and Roman philosophy. Pr.: PHILO 300. PHILO-600-0-1509

PHILO 605. Studies in 17th and 18th Century Philosophy. (3) II. A detailed study of a selected philosopher, school, or problem drawn from the history of philosophy in the 17th and 18th centuries. Pr.: PHILO 301. PHILO-605-0-1509

PHILO 610. Recent European Philosophy. (3) I or II. An examination of important issues and movements in 20th century European philosophy. Emphasis upon existentialism and phenomenology. Pr.: One course in philosophy. PHILO-610-0-1509

PHILO 620. The Development of Analytical Philosophy. (3) I. The history of analytical philosophy in the first four decades of the 20th century. A study of the work of Moore, Russell, the early Wittgenstein, and the logical positivists. Pr.: One course in philosophy. PHILO-620-0-1509

PHILO 630. Recent British-American Philosophy. (3) II. A detailed study of selected philosophical writings of current interest in Great Britain and the United States. Pr.: One course in philosophy. PHILO-630-0-1509

PHILO 680. Problems in Philosophy. (Var.) I, II, S. Independent study for qualified students. Pr.: Background of courses required for problem undertaken. PHILO-680-3-1509

PHILO 701. Topics in Metalogic. (3) I or II. Selected topics in the analysis of first-order theories and the foundations of mathematics. Pr.: PHILO 510 or MATH 511. PHILO-701-0-1509

Physical Education, Dance, and Leisure Studies

Don Kirkendall, head of department

Professors Cox,* Kirkendall,* and Noble;* Associate Professors Gould,* Johnson,* Lindley,* McElroy,* Wauthier,* and Wiggins;* Assistant Professors Bulbulian,* Kahlich, Laurie,* Miller,* Williams,* and Wilcox;* Instructor Westby; Emeriti: Professors Evans and Geyer, Associate Professors McKinney and Snyder; Instructor Poole.

Students enrolling in the Department of Physical Education, Dance, and Leisure Studies may earn a degree in physical education, leisure studies, or dance. Majors in physical education may select specialization areas such as human movement studies, exercise science, elementary physical

education, secondary physical education, athletic coaching, or athletic training.

Majors in dance specialize in performance/choreography or theory.

Transfer students

Students transferring to Kansas State University and desiring to complete a major in the PEDLS department should send an up-to-date transcript to the coordinator of professional preparation, Department of Physical Education, Dance, and Leisure Studies, Kansas State University, and to the College of Arts and Sciences. It will be evaluated prior to entrance to the University. If possible, transfer students should adhere to the following:

Check the general requirements at Kansas State University and of the college in which you intend to enroll. Try to complete as many of these requirements as possible before arrival. This is especially true of those transfer students who are completing two years of community college work prior to transfer.

Avoid taking major courses until transferring to Kansas State University if enrolled at a community college. If there are other courses you desire to take at the institution from which you are transferring, check with the KSU Department of Physical Education, Dance, and Leisure Studies for clearance prior to taking the courses.

Undergraduate study

Basic physical education requirement

Anthony Wilcox, coordinator

All KSU freshmen enroll in one semester of the course PE 101, Concepts in Physical Education, to satisfy the physical education requirement. After completion of Concepts in Physical Education, students are encouraged to enroll in a one-credit-hour course (PE 104 through 193), where an opportunity will be given for gaining knowledge, skill and appreciation of lifetime recreational activities.

Dance major

For a major in dance, students should take the following:

General education requirements—see general College of Arts and Sciences requirements for B.A. and B.S.

For a degree in dance the student must take the following:

Dance core—Required for all majors

PE 376	First Aid & CPR	1
DANCE 205	Dance as an Art Form	3
DANCE 222	Movement Improvisation 1	1
DANCE 295	Dance Composition 1	3
DANCE 460	Dance Styles & Personalities	3
DANCE 502	Dance Production (minimum of 3 semesters)	1-2
DANCE 504	Dance Aesthetics, Philosophy, & Criticism	3
DANCE 505	Methods & Materials of Dance	3
	Select one of the following:	
ART 195	Survey of Art History 1	3
ART 196	Survey of Art History 11	3
		23-26

Technique requirements—Required for all majors

DANCE 165	Ballet 1	1
DANCE 325	Ballet 11	2
DANCE 326	Ballet 111	2
DANCE 120	Modern Dance 1	1
DANCE 323	Modern Dance 11	2
DANCE 324	Modern Dance 111	2
DANCE 171	Jazz Dance 1	1
DANCE 371	Jazz Dance 11	2

A performance major is required to achieve Level 111 in one technique and Level 11 in another. Theory majors must achieve Level 11 in two techniques. Dance majors are required to take a technique class each semester. All dance students must receive the instructor's permission before advancing to a higher level.

Dance specialization—Majors must choose one

A. Performance/choreography

DANCE 502	Dance Production	1-2
DANCE 321	Variations & Partnering	1
PE 117	Social, Square, & Folk Dance	1
DANCE 495	Dance Composition 11	3
DANCE 322	Movement Improvisation 11	1
PE 330	Kinesiology	3
	Select one of the following:	
THTRE 261	Fundamentals of Acting	3
THTRE 266	Fundamentals of Technical Production	3
MUSIC 172	Styles 1, Introduction to Musical Style	4
		13-15

B. Theory

PHIL 120	Introduction to the Philosophy of Art & Literature	3
HIST 459	History of Dance in its Cultural Setting	3
PE 203	Kinesiological Foundations of Coaching	2
	Select one of the following:	
PE 445	Movement Exploration and Creative Dance for Children	3
THTRE 266	Fundamentals of Technical Production	3
	Select one of the following:	
ART 195	Survey of Art History I	3
ART 196	Survey of Art History 11	3
MUSIC 172	Styles 1, Introduction to Musical Style	4
ART 100	Design 1	3
THTRE 160	Introduction to Theatre	3
		14-15

Physical education major

For a degree in physical education students should take the following:

General education requirements—See general College of Arts and Sciences requirements for B.A. and B.S.

Physical education core
to be taken by all majors

PE 101	Concepts in Physical Education	1

Core courses to be taken by all majors:

PE 206	Professional Orientation	1
PE 320	Motor Development & Learning	3
PE 325	History & Philosophy of Physical Education	3
PE 330	Kinesiology	3
PE 335	Physiology of Exercise	3
PE 340	Social-Psychological Dimensions of Physical Activity	3
PE 561	Adapted Physical Education	3
PE 710	Measurement & Evaluation in Physical Education	3
		22

Physical education specialization areas
To earn a major in physical education a student must complete one of the following in addition to the professional physical education core:

A. Human movement studies
Fifteen hours of physical education classes numbered 300 or above, plus enough elective hours to fulfill 120-hour University requirement.

B. Exercise science

PE 535	Nutrition & Physical Activity	3
	or	
FN 502	Principles of Nutrition	3
PE 759	Theory & Supervision of Fitness Programs	3
PE 376*	First Aid & CPR	1
CHM 110	General Chemistry	5
BIOCH 120	Introductory Organic & Biological Chemistry	5

plus 9 hours of physical education course work numbered 300 or above (6 of which may be PE 792, Internship in Exercise Science).

For internship, a student must meet the following qualifications: have completed all of the physical education major courses; have an overall 2.2 GPA with a 2.5 GPA in the physical education major courses; pass a physical examination.

*Or minimum of current standard first aid and CPR certification at time of petition.

C. Elementary specialization

PE 315	Treatment of Athletic Injuries	3
PE 359	Administration of Physical Education, Athletic, & Intramural Programs	3
PE 376*	First Aid & CPR	1
PE 410	Gymnastics in Physical Education	3
PE 420	Rhythms in Physical Education	3
PE 445	Movement Exploration & Creative Dance for Children	3
PE 455	Physical Education Activities for Elementary Schools	3
DANCE 120	Modern Dance I	1
Skill competency**		0-6
		20-26

D. Secondary specialization

PE 315	Treatment of Athletic Injuries	3
PE 359	Administration of Physical Education, Athletic, & Intramural Programs	3
PE 376*	First Aid & CPR	1
PE 410	Gymnastics in Physical Education	3
PE 415	Team Sports for Secondary Schools	3
PE 420	Rhythms in Physical Education	3
PE 425	Individual & Dual Sports for Secondary Schools	3
DANCE 120	Modern Dance I	1
	or	
DANCE 165	Ballet I	1
	or	
DANCE 171	Jazz Dance I	1
Skill competency**		0-6
		20-26

E. K-12 specialization

PE 315	Treatment of Athletic Injuries	3
PE 359	Administration of Physical Education, Athletic, & Intramural Programs	3
PE 376*	First Aid & CPR	1
PE 410	Gymnastics in Physical Education	3
PE 415	Team Sports for Secondary Schools	3
PE 425	Individual & Dual Sports for Secondary Schools	3
PE 420	Rhythms in Physical Education	3
PE 445	Movement Exploration & Creative Dance for Children	3
PE 455	Physical Education Activities for Elementary Schools	3
DANCE 120	Modern Dance I	1
Skill competency**		0-6
		26-32

*or minimum of current first aid and CPR certification at time of petition.

**Competency must be demonstrated in three activities in each category below by: satisfactory completion of the related lifetime sport class; satisfactory completion of the related coaching class; intercollegiate playing experience; or varsity high school playing experience.
Category A. Team sports and aquatics: basketball, football/baseball/softball, soccer, volleyball, aquatics (WSI).***
Category B. Individual sports: archery, badminton, golf, racquetball/handball, tennis, wrestling.

***or current WSI certification at time of petition.

Professional education requirements
For those seeking teacher certification

EDAF 215	Educational Psychology I	3
EDAF 315	Educational Psychology II	3
Physical education professional semester teaching participation (must be done in area of specialization.)		8
EDCI 451	Principles of Secondary Education	3
	or	
EDCI 300	Principles of Elementary Education	3
EDAF 611	Educational Sociology	3
EDCI 476	Methods of Teaching in the Secondary School	2-3
	and/or	
EDCI 469	Physical Education in Elementary Schools	3
EDCI 316	Introduction to Instructional Media	1
EDAF 622	Psychology of Exceptional Children	3
	or	
EDAF 623	The Exceptional Child in the Regular Classroom	3
EDAF 715	Principles of Measurement	3
DED 100	Pre-Professional Laboratory Experiences Pre-professional skills test	1

The following natural science and social science courses should be taken by physical education majors:

BIOL 198	Principles of Biology	4
BIOL 240	Structure & Function of the Human Body	6
PHYS 115	Descriptive Physics	4
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3

Leisure studies major
For a degree in leisure studies students should take the following:

General education requirements
See general College of Arts and Sciences requirements for B.A. and B.S.

Leisure studies core

PE 376*	First Aid & CPR	1
LS 320	Recreation Leadership	3
LS 390	Principles & Philosophy of Recreation	3
LS 480	Orientation in Recreation	2
LS 481	Participation in Recreation	2
LS 488	Recreation for Special Populations	3
LS 489	Recreation Program	3
LS 490	Recreation Administration I	3
LS 491	Seminar in Recreation	2
		22

*or minimum of current standard first aid and CPR certification at time of petition.

Leisure studies specialization

select and complete A or B

A. Program administration—18 hours

This option is designed for the person who will be conducting and operating a recreation/park program in a variety of leisure settings. Courses will be selected from the leisure studies major approved course list, with at least one two-hour course taken from each of the three categories.

B. Special populations—18 hours

Required:

LS 493	Therapeutic Recreation Service	3

6 hours from the following:

PSYCH 505	Abnormal Psychology	3
PSYCH 622/	Psychology of Exceptional Children	3
EDAF 622	Psychology	3
SOCIO 560	Juvenile Delinquency	3
SOCIO 561	Criminology	3
SOCIO 744	Social Gerontology: An Introduction to the Sociology of Aging	3
PSYCH 715	Psychology of Aging	3
EDAF 628	Characteristics of the Emotionally Disturbed	3

Nine hours from Group I or II as listed on the leisure studies major approved course list.

Directed field experience

internship semester

LS 492	Internship in Recreation	15

Internship is a minimum 15-week, 600-hour experience in an approved recreation/leisure/service agency.

Student must meet the following qualifications: 2.2 GPA in all course work attempted at KSU, 2.5 GPA in all leisure studies major core courses; leisure studies majors must have satisfactory pre-internship experiences in leisure/recreation field, minimum of 280 hours during college/university preparation; and physical examination required.

Departmental options

Coaching certification program

This program is designed to prepare coaches in all areas of varsity athletics, and is open to non-majors as well as students majoring in physical education, dance, and leisure studies. Students completing the following courses will receive an athletic coaching endorsement from the Department of Physical Education, Dance, and Leisure Studies. Majors taking this program must also complete all requirements for a major in either physical education, dance, or leisure studies. The coaching program is not a substitute for specialization requirements. Non-majors are not required to take any work in the department in addition to the coaching program.

Coaching program requirements

PE 315	Treatment of Athletic Injuries	3
PE 359	Organization & Adminstration of Athletics	3
PE 202	Physiological Foundations of Coaching	2
	or	
PE 335	Physiology of Exercise	4
PE 203	Kinesiological Foundations of Coaching	2
	or	
PE 330	Kinesiology	3
PE 204	Psychological Foundations of Coaching	2
	or	
PE 320	Motor Behavior & Skill Learning	3

Four hours selected from the following:

PE 298	Coaching & Officiating Wrestling	2
PE 299	Coaching & Officiating Swimming	2
PE 300	Coaching & Officiating Volleyball	2
PE 302	Coaching & Officiating Basketball	2
PE 303	Coaching & Umpiring Baseball	2
PE 304	Coaching & Officiating Track and Field	2
PE 305	Coaching & Officiating Football	2
PE 309	Coaching & Officiating Tennis and Golf	2

Athletic training certification program

This program is designed to prepare athletic trainers for all levels of athletics. It is especially applicable to those teacher preparation students desiring to serve as junior or senior high school athletic trainers. Physical education majors taking this program must also complete the PE core and selected specialization area. Non-physical education majors are not required to take any work in the department in addition to the athletic training program.

Athletic training option for physical education majors—any specialization

FN 132	Basic Nutrition	3
PE 315	Treatment of Athletic Injuries	3
PE 550	Advanced Techniques of Athletic Training	3
PE 585	Internship in Techniques of Athletic Training (minimum of 150 hours each semester for 4 semesters)	8
FCDEV 352	Concepts of Personal Health	3
		20

Athletic training option for non-physical education majors

BIOL 240	Structure & Function of the Human Body	6
FN 132	Basic Nutrition	3
FCDEV 352	Concepts of Personal Health	3
PE 376	First Aid & CPR	1
PE 330	Kinesiology	3
PE 335	Physiology of Exercise	3
PE 561	Adapted Physical Education	3
PE 315	Treatment of Athletic Injuries	3
PE 550	Advanced Techniques of Athletic Training	3
PE 585	Internship in Athletic Training (minimum of 150 hours each semester for 4 semesters)	8
		36

Graduate study

Larry Noble, coordinator

The Department of Physical Education, Dance, and Leisure Studies offers a Master of Science in Physical Education, Master of Science in Leisure Studies, and a Doctor of Philosophy in Motor Behavior.

Ph.D. in physical education with specialization in motor behavior

The Ph.D. program is designed to develop scholars and researchers in the disciplinary area of motor behavior. This area of physical education highlights the relationships between the behavioral sciences and physical activity. The strength of the program lies in the competence of the graduate faculty and is enhanced by the expertise and facilities of related departments on campus such as psychology, sociology, and family and child development. Specific areas of concentration are: sport sociology, sport psychology, motor development, and motor learning.

Of the 93 minimum hours of graduate credit (beyond the bachelor's) required for the Ph.D., the department requires 30 hours of dissertation research; 15-16 hours credit for work in statistics and research courses; 24 hours of graduate course work within the department; 12 hours from an outside support area (e.g. psychology, sociology, physical education, family and child development, and statistics); and 12 hours of electives. This program is outlined below:

Program of study (93 hours minimum)

Specialization
24 hours in the motor behavior speciality.

Outside support
12 hours of course work outside of the physical education, dance, and leisure studies department in support area(s).

Research
15-16 hours of statistics and research courses as listed below:

PE 810	Evaluation in Physical Education	3
PE 815	Research Methods for Physical Education, Dance, & Leisure Studies	3
STAT 702	Statistical Methods for Social Sciences	3
	or	
STAT 703	Statistical Methods for Natural Scientists	3
STAT 704	Analysis of Variance & Covariance	2
STAT 705	Regression & Correlation Analysis	2
STAT 710	Sample Survey Methods	2
	or	
STAT 720	Design of Experiments	3

In addition, the Ph.D. candidate will be expected to demonstrate proficiency in use of computer center resources. This may entail the completion of specific computer science courses.

Electives
12 hours from physical education or related area to be decided upon by the student and supervisory committee.

Dissertation
30 hours

The specific program will be determined by the student and the supervisory committee in order to satisfy individual needs.

Master of science

The M.S. degrees in physical education and leisure studies are designed to assist students in developing professional and research skills in a variety of areas. In working toward the degree, students have the opportunity to study with faculty possessing specialized expertise in many scientific foundations and program and administration areas. Examples of courses and areas of study include: exercise physiology, biomechanics, science, motor behavior, curriculum and administration, sport history, recreation administration, and special populations. Students may choose from three different degree plans (30 hours each) depending on their personal needs and interests: thesis; master's report or mini-thesis; and non-thesis, non-report. To a large extent the student and the advisory committee are responsible for developing the student's curriculum. Individual programs are designed to meet the unique needs of each student. Up to 12 hours related to the student's area of emphasis may be taken outside the department.

Further details about programs and information about possible financial assistance may be obtained by writing to the coordinator.

Physical education Undergraduate credit

The following courses may be taken for elective credit.

Adaptive physical education
PE 100. Adaptive Physical Education. (1). Exercise programs adapted to the needs of the special student. PE-100-5-0835

Concepts of physical education
PE 101. Concepts in Physical Education. (1). PE-101-1-5-0835

Lifetime sports
Aquatics
PE 104. Swimming I. (1). Beginning instruction for students who have no previous experience with swimming. PE-104-5-0835
PE 105. Swimming II. (1). For the beginning swimmer who has had some previous swimming experience. PE-105-5-0835
PE 106. Swimming III. (1). Pr.: PE 105 or consent of instructor. PE-106-5-0835
PE 107. Swimming IV. (1). Pr.: PE 106 or consent of instructor. PE-107-5-0835
PE 108. Advanced Lifesaving. (1). Pr.: PE 107 or consent of instructor. PE-108-5-0835
PE 109. Water Safety Instruction. (2). Methods of teaching swimming, lifesaving, and water safety. Upon satisfactory completion of this course a certificate is awarded by the American Red Cross as a water safety instructor. Pr.: A current senior lifesaving certificate. PE-109-0-0835
PE 110. Scuba Diving. (1). PE-110-5-0835
PE 111. Diving. (1). PE-111-5-0835
PE 112. Synchronized Swimming. (1). PE-112-5-0835
PE 113. Water Polo. (1). PE-113-5-0835

Team sports
PE 120. Basketball. (1). Beginning instruction for students who have had no previous instruction in basketball. PE-120-5-0835
PE 121. Field Hockey. (1). PE-121-5-0835
PE 122. Flag Football. (1). Beginning instruction for students who have had no previous instruction in football. PE-122-5-0835
PE 123. Soccer. (1). PE-123-5-0835
PE 124. Softball. (1). PE-124-5-0835
PE 125. Team Handball. (1). PE-125-5-0835
PE 126. Volleyball I. (1). PE-126-5-0835
PE 127. Volleyball II. (1). Pr.: PE 126 or consent of instructor. PE-127-5-0835

Individual and dual sports
PE 135. Archery. (1). PE-135-5-0835
PE 136. Badminton. (1). PE-136-5-0835
PE 138. Bowling. (1). PE-138-5-0835
PE 139. Fencing. (1). PE-139-5-0835
PE 140. Golf. (1). PE-140-5-0835
PE 141. Gymnastics and Apparatus I. (1). PE-141-5-0835

PE 142. Gymnastics and Apparatus II. (1). Pr.: PE 141 or consent of instructor. PE-142-5-0835
PE 143. Handball. (1). PE-143-5-0835
PE 144. Judo I. (1). PE-144-5-0835
PE 145. Judo II. (1). Pr.: PE 144 or consent of instructor. PE-145-5-0835
PE 146. Karate I. (1). PE-146-5-0835
PE 147. Karate II. (1). Pr.: PE 146 or consent of instructor. PE-147-5-0835
PE 148. Racquetball. (1). PE-148-5-0835
PE 149. Riflery. (1). PE-149-5-0835
PE 150. Self Defense. (1). Instruction in selected self defense techniques derived from judo, karate, and other martial arts. PE-150-5-0835
PE 151. Tennis I. (1). PE-151-5-0835
PE 152. Tennis II. (1). Pr.: PE 151 or consent of instructor. PE-152-5-0835
PE 153. Track and Field. (1). PE-153-5-0835
PE 154. Tumbling and Floor Exercise. (1). PE-154-5-0835
PE 155. Wrestling. (1). PE-155-5-0835

Training and conditioning activities
PE 160. Aerobic Dancing and Exercise. (1). PE-160-5-0835
PE 161. Fitness and Conditioning. (1). PE-161-5-0835
PE 162. Jogging. (1). PE-162-5-0835
PE 163. Weight Training. (1). PE-163-5-0835

Indoor and outdoor recreational games and sports
PE 170. Angling. (1). PE-170-5-0835
PE 171. Backpacking and Hiking. (1). PE-171-5-0835
PE 172. Bicycle Touring. (1). PE-172-5-0835
PE 173. Billiards and Snooker. (1). PE-173-5-0835
PE 174. Bow Hunting. (1). PE-174-5-0835
PE 175. Camping. (1). PE-175-5-0835
PE 176. Canoeing I. (1). Pr.: PE 105 or equiv. PE-176-5-0835
PE 177. Canoeing II. (1). Pr.: PE 176 or consent of instructor. PE-177-5-0835
PE 178. Crew. (1). PE-178-5-0835
PE 179. Cross Country Skiing. (1). PE-179-5-0835
PE 180. Downhill Skiing. (1). PE-180-5-0835
PE 181. English Horsemanship I. (1). PE-181-5-0835
PE 182. English Horsemanship II. (1). Pr.: PE 181 or consent of instructor. PE-182-5-0835
PE 183. Western Horsemanship I. (1). PE-183-5-0835
PE 184. Western Horsemanship II. (1). Pr.: PE 183 or consent of instructor. PE-184-5-0835
PE 185. Orienteering. (1). PE-185-5-0835
PE 186. Recreational Games. (1). PE-186-5-0835
PE 187. Roller Skating. (1). PE-187-5-0835
PE 188. Sailing I. (1). Pr.: PE 105 or equiv. PE-188-5-0835
PE 189. Sailing II. (1). Pr.: PE 188 or consent of instructor. PE-189-5-0835
PE 190. Table Tennis. (1). PE-190-5-0835
PE 191. Trap Shooting. (1). PE-191-5-0835
PE 192. Water Skiing. (1). Pr.: PE 105 or equiv. PE-192-5-0835
PE 193. Wind Surfing. (1). Pr.: PE 105 or equiv. PE-193-5-0835

The following courses may be taken by students majoring in physical education or other students meeting prerequisite requirements.

PE 200. Concepts of Adult Physical Fitness. (2). A study of the facts about the effects of regular exercise on physical fitness and health. PE-200-0-0835

PE 202. Physiological Foundations of Coaching. (2) I. The human organism under both resting and exercise conditions, including the effect of training and conditioning, heat balance, nutrition, drugs and exercise metabolism on athletic performance. Special attention to applications for coaches. Not for PE majors. PE-202-0-0835

PE 203. Kinesiological Foundations of Coaching. (2) I. The structure and function of the musculoskeletal system and the mechanical principles underlying sports performance with special attention to applications for coaches. The ability to analyze sports performance to determine the muscles involved, joint movements, and mechanical details with the unaided eye and with the use of film and video tape analysis will be developed. Not for PE majors. PE-203-0-0835

PE 204. Psychological Foundations of Coaching. (2) II. Principles of learning and performing sports skills with special attention to applications for coaches. Specific areas of study include motivation, methods of teaching, and general factors affecting the learning and performing of sports skills. Pr.: PSYCH 110. Not for PE majors. PE-204-0-0835

PE 206. Professional Orientation. (1) I. Orientation to the fields of physical education, recreation and dance; the university; and the department. PE-206-0-0835

PE 298. Coaching and Officiating Wrestling. (2) II. On sufficient demand. Study of rules, theory and practices; methods of coaching. Pr.: PE 202, 203, 204. PE-298-1-2-0835

PE 299. Coaching and Officiating Swimming. (2) II. In even years. Study of rules, theory and practices; methods of coaching. Pr.: PE 202, 203, 204. PE-299-2-0835

PE 300. Coaching and Officiating Volleyball. (2) I. Study of rules, theory and practices; methods of coaching. Pr.: PE 202, 203, or 204. PE-300-2-0835

PE 302. Coaching and Officiating Basketball. (2) II. Study of rules, theory and practices; methods of coaching. Pr.: PE 202, 203, or 204. PE-302-2-0835

PE 303. Coaching and Umpiring Baseball. (2) I. In even years. Study of rules, theory and practices; methods of coaching. Pr.: PE 202, 203, or 204. PE-303-2-0835

PE 304. Coaching and Officiating Track and Field. (2) II. In odd years. Study of rules, theory and practices; methods of coaching. Pr.: PE 202, 203, or 204. PE-304-2-0835

PE 305. Coaching and Officiating Football. (2) I. Study of rules, theory and practices; methods of coaching. Pr.: PE 202, 203, or 204. PE-305-2-0835

PE 309. Coaching and Officiating Tennis and Golf. (2) I. In odd years. Study of rules, theory and practices; methods of coaching. Pr.: PE 202, 203, or 204. PE-309-2-0835

PE 315. Treatment of Athletic Injuries. (3) I. Principles and practices of massage, taping and care of minor athletic injuries. Pr.: PE 203 or BIOL 240 or conc. enrollment in BIOL 240. PE-315-0-0835

PE 320. Motor Development and Learning. (3) I, II. Motor behavior theories, motor development, neurological and psychological basis of motor behavior, motor and skill learning, the state of the performer and the application of instructional techniques. Two hours lec. and two hours lab a week. Pr.: PSYCH 110. PE-320-0-0835

PE 325. History and Philosophy of Physical Education. (3) II. Historical and philosophical foundations of physical education and the principles of physical education. Pr.: PE 206. PE-325-0-0835

PE 330. Kinesiology. (3) I, II. Mechanical and anatomical aspects of overt human movement. Kinematic and kinetic principles applied to the analysis of human movement. Two hours lec. and two hours lab a week. Pr.: BIOL 240 and PHYS 115. PE-330-0-0835

PE 335. Physiology of Exercise. (3) I, II. The responses of the human body to exercise, emphasizing generation of energy in skeletal muscle, dynamics of muscular contraction, oxygen transport system, body composition, and training regimens. Two hours lec. and two hours lab a week. Pr.: BIOL 240. PE-335-0-0835

PE 340. Social and Psychological Dimensions of Physical Activity. (3) I, II. Theories and research on the social and psychological significance of physical activity including implications for physical education and athletic programs. Pr.: SOCIO 211 and PSYCH 110. PE-340-0-0835

PE 359. Administration of Physical Education, Athletic, and Intramural Programs. (3) II. Study of problems associated with the conduct of activity programs. Specifically considered are selection and care of equipment and facilities, public relations, legal liability, and scheduling. Pr.: Junior standing. PE-359-0-0835

PE 376. First Aid and CPR. (1) I, II. Training for prevention and treatment of injuries in an emergency, including cardiopulmonary resuscitation (CPR). First Aid and CPR by the American Red Cross. PE-376-1-0835

PE 377. First Aid and CPR. (1) I, II. Methods of teaching the American Red Cross first aid and CPR courses. Upon successful completion of the course, the student is given Red Cross certification as a first aid and CPR instructor. Pr.: Current Red Cross certification in first aid. PE-377-1-0835

PE 378. First Aid (basic instructors). (1) I, II. Training in methods of teaching basic first aid measures to young children. For majors in Department of Physical Education, Dance, and Leisure Studies only. Pr.: Current certification in first aid (multimedia) or current teaching certificate in any teaching field. PE-378-3-0835

PE 379. Physical Education for the Elementary School Teacher. (3). Materials, techniques, and programs in physical education suitable for the different age periods in the elementary school. Two hours rec. and two hours lab a week. Pr.: Sophomore standing and DED 202 or consent of instructor. Not open to majors in Physical Education, Dance, and Leisure Studies. PE-379-7-0835

PE 399. Sophomore Honors Seminar. (1-3) I. Selected topics in physical education, dance, and leisure studies. Open to nonmajors in the Honors Program. PE-399-4-4900

PE 410. Gymnastics in Physical Education. (3) I. Application of scientific principles to the teaching of gymnastics. Emphasis upon skill technique and spotting procedures for grades K-12. Pr.: PE 320, 330, and 335 (or any two and conc. enrollment in the third). PE-410-0-2-0835

PE 415. Team Sports for Secondary Schools. (3) II. Application of scientific principles to the teaching of team sports. Emphasis upon sports selected from the following list: basketball, field hockey, flag football, soccer, softball, speedaway, speedball, team handball, and volleyball. One hour lec. and four hours lab a week. Pr.: PE 320, 330, and 335 (or any two and conc. enrollment in the third). PE-415-1-2-0835

PE 420. Rhythms in Physical Education. (3) II. Application of scientific principles to the teaching of rhythmical skills. Emphasis on methods of teaching creative, folk, square, and social dance in grades K-12. Pr.: PE 320, 330, and 335 (or any two and conc. enrollment in the third). PE-420-1-2-0835

PE 425. Individual and Dual Sports for Secondary Schools. (3) I. Application of scientific principles to the teaching of individual and dual sports. Emphasis upon sports selected from the following lists: archery, badminton, bowling, fencing, golf, handball, racquetball, tennis, and wrestling. One hour lec. and four hours lab a week. Pr.: PE 320, 330, and 335 (or any two and conc. enrollment in the third). PE-425-1-2-0835

PE 430. Practicum Physical Education. (2) I, II. Supervised students assist in lifetime sports classes. Four hours lab a week. Pr.: Junior standing. PE-430-1-2-0835

PE 445. Movement Exploration and Creative Dance for Children. (3) I. Application of scientific principles to the teaching of basic movement concepts and creative dance for grades K-6. Emphasis upon a guided discovery and problem-solving approach. One hour lec. and four hours lab a week. Pr.: PE 320, 330, and 335 (or any two and conc. enrollment in the third). PE-445-1-2-0835

PE 455. Physical Education Activities for Elementary Schools. (3) II. Application of scientific principles to the teaching of physical education for grades K-6, emphasizing fundamental motor skills, games of low and high organization, lead-up games, self-testing activities, warm-up activities, physical fitness testing, and classroom games. One hour lec. and four hours lab a week. Pr.: PE 320, 330, and 335 (or any two and conc. enrollment in the third). PE-455-1-2-0835

PE 461. Observation in Physical Education. (2) I, II. Observation of students engaged in school or community physical activity programs. Emphasis upon developmental assessment, interaction with students, and limited planning and organization of appropriate physical education activities. Two hours lab a week and one hour rec. Pr.: Junior standing and one or more physical education methods courses. PE-461-5-0835

PE 463. Laboratory Practicum in Physical Education. (1-2) I, II, S. Supervised students assist in laboratory. Four hours lab a week. Pr.: Junior standing and appropriate background for problem undertaken. PE-463-2-0835

PE 498. Honors Tutorial in Physical Education. (1-3) I, II. Individually directed research in physical education, normally as a preliminary to writing a Senior Honors Thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the Honors Program of the College of Arts & Sciences, and permission of instructor. PE-498-4-0835

Undergraduate and graduate credit in minor field

PE 515. History of Sport. (3). The historical development of sport (especially in Europe and North America) including the growth of competition, the rise of mass spectator sports, elitism, and the changing function of sport. History of sport as business and history of the relationship between sport and other institutions. (See HIST 515.) PE-515-0-2205

PE 535. Nutrition and Physical Activity. (3). The study of nutrition concepts, physical activity, and their interrelationships. Emphasis wll be on weight control; fads and fallacies of diet; physical fitness; and athletics. Pr.: BIOL 198 and consent of instructor. (See FN 535.) PE-535-0-0835

PE 550. Advanced Athletic Training Techniques. (3) II. Principles and procedures of recognition, taping, treatment, and rehabilitation of major athletic injuries. Two hours rec. and two hours lab a week. Pr.: PE 315 and BIOL 240. PE-550-0-0835

PE 561. Adapted Physical Education. (3) I, II. Developmental, remedial, and corrective physical education, emphasizing adaptations designed around scientific principles to meet the needs of individuals requiring special attention. Pr.: PE 330. PE-561-0-0835

PE 585. Internship in Athletic Training. (1-4) I, II, S. Supervised clinical application of practical skills in athletic training. Pr.: PE 376, PE 550. May be repeated for a total of eight credit hours with additional prerequisite of PE 330 and PE 335 required for last four hours. PE-585-2-0835

PE 599. Independent Studies in Physical Education. (1-3). Selected topics in physical education. Maximum of three hours applicable toward a degree. Pr.: Consent of department head. PE-599-3-0835

Undergraduate and graduate credit

PE 700. Principles and Philosophy of Physical Education. (3) II. Study of historical and philosophical foundations of physical education and an analysis of the principles of physical education. PE-700-0-0835

PE 702. PEDLS Workshop. (1-3) I, II, S. Intensified study of new and innovative techniques used in physical education, dance, and leisure studies. Practical considerations of skill development, learning, and techniques of selected activities. May be counted for degree credit no more than once by any student. Pr.: Senior standing and consent of instructor. PE-702-0-0835

PE 703. Minority Groups in Sports. (3). The contributions, problems, and discrimination of minority groups in sports. Pr.: SOCIO 211, PE 340, PSYCH 435, or HIST 539. PE-703-0-0835

PE 710. Measurement and Evaluation in Physical Education. (3) I, II. Techniques of measuring and evaluating, including the application of statistics to skill and written test theory, construction and critique of tests. Pr.: STAT 320 and all other physical education core classes. PE-710-0-0835

PE 718. Film Analysis of Sport. (3). On sufficient demand. The analysis of human movement using film, tape, and other related aids. Pr.: PE 330. PE-718-0-0835

PE 731. Physical Education Curriculum for the Secondary School. (3). On sufficient demand. Organization of material in a progression for a secondary school physical education program. Pr.: EDCI 476. PE-731-0-0835

PE 745. Sociology of Sport. (3) II. A critical analysis of sport and leisure activity in contemporary American society, focusing on such issues as sport participation and social mobility, race and sports, women and sports, and audience involvement (see SOCIO 745). Pr.: SOCIO 211. PE-745-0-0835

PE 750. Teaching Concepts of Physical Education. (3) I. A study of teaching methods applied to instruction of the basic concepts of physical education; organization of teaching materials for a foundations or conceptual program on physical education. PE-750-0-0835

PE 759. Theory and Supervision of Fitness Programs. (3) I. Development and supervision of individualized fitness programs and the principles and procedures of exercise stress tests, including resting and exercising ECG, pulmonary function, body composition, exercise prescription, and the relationship between physical fitness and the risk of coronary heart disease. Two hours rec. and two hours lab a week. Pr.: PE 335. PE-759-0-0835

PE 775. Seminar in Physical Education. (Var.). Recent trends and problems in physical education. Pr.: Senior standing and consent of instructor. PE-775-0-0835

PE 792. Internship in Exercise Science. (6-8) I, II, S. Supervised field experience for the exercise science major in training settings such as YMCA, YWCA, municipal recreation agency, or industrial fitness agency. May be completed with half-time assignment for 12-16 weeks or full time assignment for 6-8 weeks. Pr.: PE 759. PE-792-2-0835

PE 799. Problems in Physical Education. (Var.). Pr.: Background of courses needed for problem undertaken. PE-799-3-0835

Graduate credit

PE 800. Advanced Physiology of Exercise. (4) II. Effects of exercise on the human organism with special emphasis on current research in sport medicine and exercise science. Pr.: PE 335. PE1-800-1-8-0835

PE 802. The Athletic Directorship. (3). On sufficient demand. The administration of the inter-collegiate or inter-scholastic athletic program with focus on the problems facing the chief administrator of the programs. Areas of study include association rules and regulations, implications of legislation, crowd control and management, scheduling and budget. Pr.: PE 359 or EDAF 611. PE-802-0-0835

PE 805. Sport and Human Behavior. (3) On sufficient demand. A study of the state of the sport performer and the effects of sport on human behavior. Pr.: PE 340 and nine hours of graduate credit in Psychology (500 level or above). PE-805-0-0935

PE 806. Motor Development. (3). On sufficient demand. A study of psychomotor development. The focus is on the growth years, though developmental considerations for all age groups are considered. Implications for sport, exercise, and physical activity are discussed. Pr.: PE 320. PE-806-0-0835

PE 807. Motor Learning and Performance. (3). On sufficient demand. Application of learning principles to skill acquisition in sport and human performance; review of current theories that account for learning in the motor domain; and practical applications. Pr.: PE 320 and nine hours of graduate credit in psychology (500 level or above). PE-807-0-0835

PE 808. Advanced Issues in Sport Sociology. (3). On sufficient demand. An in-depth analysis of the sociology of sport literature with special interest in critiquing the theoretical frameworks and methodologies employed. Pr.: PE 745 or SOCIO 745. PE-808-9-0835

PE 810. Evaluation in Physical Education. (3). On sufficient demand. A study of basic techniques used to evaluate objectives, conduct research, and conduct laboratory experiments in physical education. Pr.: PE 710. PE-810-0-0835

PE 815. Research Methods in Physical Education, and Leisure Studies. (3) I. A study of techniques of research including the design of experiments and the use of appropriate statistics. PE-815-0-0835

PE 825. Mechanical Analysis of Human Movement. (3) I. A study of mechanical principles applied to analysis of human movement including cinematographical analysis of sports activities. Pr.: PE 330. PE-825-0-0835

PE 830. The Child in Sport. (3). On sufficient demand. Factors prompting children's entry into sports and the consequences of participation in organized sports for children. Pr.: PE 320 or EDAF 215. PE-830-0-0835

PE 835. Physical Education for the Atypical. (3). On sufficient demand. Techniques for assessing the needs and functioning level of exceptional people of all ages; and steps in developing and evaluating programs. Two hours lec. and two hours lab. Pr.: PE 561 or EDAF 622. PE-835-1-3-0835

PE 896. Topics in Physical Education. (1-4). PE-896-3-0835

PE 897. Research in Physical Education. (Var.). Pr.: Sufficient training to carry on the line of research undertaken. PE-897-4-0835

PE 898. Master's Report. (1-4). PE-898-4-0835

PE 899. Master's Thesis. (1-6). PE-899-3-0835

PE 905. Sport and Human Behavior II. (3). On sufficient demand. Analysis and discussion of experimental results of research in sport and human behavior including a study of theoretical models for conducting research. Pr.: PE 805. PE-905-0-0835

PE 906. Advanced Motor Development. (3). On sufficient demand. Analysis and discussion of experimental results of motor development research including a study of theoretical models for conducting research. Pr.: PE 806. PE-906-6-0835

PE 907. Advanced Motor Learning and Performance. (3). On sufficient demand. Neurological and physiological factors involved in movement accuracy and related underlying variables. In depth investigation of the various theories that attempt to explain skilled motor learning and performance. Pr.: PE 807. PE-907-0-0835

PE 996. Advanced Topics in Motor Behavior. (1-3). On sufficient demand. Selected advanced topics in motor behavior. May be repeated with consent of supervisor committee. PE-996-0-0835

PE 997. Motor Behavior Seminar. (1-3). On sufficient demand. Intensive discussion of an area of current interest in motor behavior based on the class's study of pertinent original research. PE-997-0-0835

PE 999. Research in Motor Behavior. (Var.) I, II, S. Doctoral level research. PE-999-4-0835

Dance

Undergraduate credit

DANCE 117. Social, Square, and Folk Dance. (1). DANCE-117-5-1008

DANCE 120. Modern Dance I. (1). DANCE-120-5-1008

DANCE 165. Ballet I. (1). DANCE-165-5-1008

DANCE 171. Jazz Dance I. (1) I, II. A basic course in jazz technique and style, focusing on isolations, rhythmic articulation, and the control and release of energy. Two hours lab a week. DANCE-171-5-1008

DANCE 205. Dance as an Art Form. (3) I. Dance in its religious, social, and artistic forms. Film, slides, demonstrations, and lectures will trace the function of dance in society, the influence of society on dance, how dance relates to other art forms, and current trends in the dance world. DANCE-205-0-1008

DANCE 222. Movement Improvisation I. (1). On sufficient demand. Provides the opportunity to: 1) discover personal creative sources for spontaneous movement; 2) increase movement self-confidence in informal group settings; 3) rediscover "Play" through movement; and 4) explore basic principles of movement improvisation—space, weight, shape, and time. Pr.: Consent of instructor. DANCE-222-1-0-1008

DANCE 295. Dance Composition I. (3). On sufficient demand. Introduction to the principles of the choreographic craft. Practical experience in development of movement phrases. Culminating presentation and critique of work. DANCE-295-1-1-1008

DANCE 321. Variations and Partnering. (1). On sufficient demand. Introduction to the principles of repertoire performance using various styles and forms of choreography. Directed study in partnering. (Alternating years of modern and ballet incorporating pointe and classical variations and pas de deux.) Pr.: Consent of instructor. DANCE-321-1-0-1008

DANCE 322. Movement Improvisation II. (1). On sufficient demand. Continues exploration of principles of movement improvisation. Experience with props, architectural spaces, and improvisation as a tool for choreography and performance. Pr.: DANCE 222. DANCE-322-1-0-1008

DANCE 323. Modern Dance II. (2) I, II. May be repeated for a total of eight hours. Only two of these hours may be applied towards humanities requirements. Pr.: DANCE 120 and consent of instructor. DANCE-323-1-0-1008

DANCE 324. Modern Dance III. (2) I, II. May be repeated for a total of eight hours. Only two of these hours may be applied toward humanities requirements. Pr.: DANCE 323 and consent of instructor. DANCE-324-1-0-1008

DANCE 325. Ballet II. (2) I, II. May be repeated for a total of eight hours. Only two of these hours may be applied towards humanities requirements. Pr.: DANCE 165 and consent of instructor. DANCE-325-1-0-1008

DANCE 326. Ballet III. (2) I, II. May be repeated for a total of eight hours. Only two of these hours may be applied towards humanities requirements. Pr.: DANCE 325 and consent of instructor. DANCE-326-1-0-1008

DANCE 371. Jazz Dance II. (2) I, II. Intermediate course in jazz technique and style focusing on development of isolations, rhythmic articulation, and the control and release of energy. Performance of advanced movement sequences. May be repeated for a total of eight hours. Only two of these hours may be applied toward humanities requirements. Pr.: DANCE 171. DANCE-371-1-0-1008

DANCE 459. History of Dance in Its Cultural Setting. (3) II. The study of developments and changes in the style, technique, and purpose of ceremonial and theatrical dancing from the Greeks to the present. Emphasis on the interaction between this art and the total culture—social, religious, artistic, and political—in which it is performed. Pr.: Sophomore standing (same as HIST 459). DANCE-459-0-1008

DANCE 460. Dance Styles and Personalities. (3). On sufficient demand. Brief overview of dance, primitive to the Renaissance. Primary focus is on the contributions of persons and styles to the development of the dance, ballet de cour to contemporary trends. DANCE-460-0-1008

DANCE 495. Dance Composition II. (3). On sufficient demand. Advanced training and directed experiences in dance composition. Development of theme, phrasing, and style with particular emphasis on group forms. Pr.: DANCE 295. DANCE-495-1-1-1008

DANCE 498. Honors Tutorial in Dance. (1-3) I, II. Individually directed research/creative endeavor in dance, normally as a preliminary to writing a Senior Honors Thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the Honors Program of the College of Arts and Sciences, and permission of instructor. DANCE-498-0-1008

DANCE 499. Senior Honors Thesis. Open only to seniors in the Arts and Sciences Honors Program. DANCE-499-0-1008

Undergraduate and graduate credit in minor field

DANCE 502. Dance Production. (1-2) I, II. Studies in the techniques of dance production and performance. Emphasis is on practical application. May be repeated **four** times. Pr.: Junior standing or consent of instructor. DANCE-502-1-0-1008

DANCE 504. Dance Aesthetics, Philosophy, and Criticism. (3). On sufficient demand. Examination of dance in relation to the visual and performing arts. Analysis of form and content in aesthetic judgment. Practical experience in observation, and written and oral critiques of dance performances. Pr.: DANCE 205, DANCE 460. DANCE-504-0-1008

DANCE 505. Methods and Materials of the Dance. (3). On sufficient demand. A practical examination of dance in the classroom for its educative, artistic, disciplinary and therapeutic values. Emphasis on methods of teaching various techniques of all levels of ability under supervision of the instructor. Pr.: DANCE 205 and DANCE 323 or DANCE 325. DANCE-505-1-5-1008

DANCE 599. Independent Studies in Dance. (1-3). Selected topics in dance. Maximum of three hours applicable toward degree. Pr.: Consent of department head. DANCE-599-3-1008

Leisure studies

Undergraduate credit

LS 320. Recreational Leadership. (3) I. Principles and methods of organizing communities for leisure activities. LS-320-0-0835

LS 390. Principles and Philosophy of Recreation. (3) II. A study of the basic principles of recreation, including a survey of past and current trends in the recreation movement. LS-390-0-0835

LS 480. Orientation in Recreation. (2) I. To orient the student to recreation programs in voluntary, public, military, private, and commercial agencies. LS-480-2-0835

LS 481. Participation in Recreation. (2) II. Directed beginning experience in recreation/leisure service agencies. An evaluation and reports on experiences within the agencies will be done. Pr.: LS 320. LS-481-2-2103

LS 487. Recreation Facility Management. (3) II. Study of planning, operations, and management of public, private, voluntary, and commercial recreation facilities. Facilities examined include community centers, swimming pools, craft centers, roller and ice rinks, court areas, and game fields. Two hours lec. and two hours lab. Pr.: LS 320. LS-487-1-5-0835

LS 488. Recreation for Special Populations. (3) I. Study of recreation programs for special populations. Characteristics of the disabled, disadvantaged, mentally ill, retarded, aged, physically handicapped, etc. Pr.: LS 320 and consent of instructor. LS-488-0-2103

LS 489. Recreation Program. (3) I, II. A study of the program forms and structures related to public, voluntary, military, private, and commercial agencies. Pr.: LS 480. LS-489-2-2103

LS 490. Recreation Administration I. (3) I. Development and evaluation of recreation patterns, programs, and structures. Pr.: LS 480. LS-490-0-2103

LS 491. Seminar in Recreation. (2) I, II. The study of current trends and issues in recreation. Pr.: LS 481. LS-491-0-2103

LS 492. Internship in Recreation. (15) I, II, S. Intensive practical experience over a 15-week period in an approved recreation/leisure service agency. Pr.: LS 491. LS-492-2-2103

LS 493. Therapeutic Recreation Service. (3) II. The development of competencies in servicing special populations in public and institutional settings. Examination of medical and non-medical models of implementation service. Pr.: LS 488 or consent of instructor. LS-493-0-2103

LS 498. Honors Tutorial in Leisure Studies. (1-3) I, II, Individually directed research/creation endeavor leisure studies, normally as a preliminary to writing a Senior Honors Thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the Honors Program of the College of Arts and Sciences, and permission of instructor. LS-498-0-2103

LS 499. Senior Honors Thesis. Open only to seniors in the Arts and Sciences Honors Program. LS-499-0-2103

LS 599. Independent Studies in Leisure Studies. (1-3). Selected topics in Recreation. Maximum of three hours applicable toward a degree. Pr.: Consent of instructor. LS-599-3-0835

Undergraduate and graduate credit

LS 705. Recreation Theory and Policy. (3) I, II. On sufficient demand. Development of theory and resulting recreational policies for public, community, institutional, and private agencies. Pr.: LS 489. REC-705-0-0835

LS 715. Recreation Program, Finance, and Budget. (3) I, II, S. On sufficient demand. Development of recreation programs and programmatic budgets for a recreation/leisure services agency. Study of sources for financing recreational programs of all types and a study of money management systems for recreation agencies. Pr.: LS 489 or LS 705. LS-715-0-0835

LS 720. Organization and Administration of Intramural Programs. (3) II. Policies and procedures in organizing and administering an intramural program. LS-720-0-0835

LS 725. Recreation Administration II. (3) I. Development of administrative procedures as applied to programs, personnel, and facilities. Design administrative models and apply theories to the recreation/leisure field. Pr.: LS 490. LS-725-0-2103

REC 791. Seminar in Recreation. (1-3) I. Designed for recreation specialists. Discussion of current research and innovations. Evaluation of recreational/leisure programs. Small group interaction. May be taken with Internship in Recreation. LS-791-0-0835

LS 792. Internship in Recreation. (3-8). Supervised experiences with recreation services, such as city recreation, government agencies, and other leisure service agencies. May be completed in one of the following two ways, as directed by the student's advisor: a) summer assignment in an approved agency with concurrent enrollment in the summer school course designation; b) half-time assignment during a full semester, or full-time assignment during a semester in an approved or supervised recreation/leisure service job, both with concurrent enrollment in the course designation. May be repeated once. LS 791 (may be taken conc.) and consent of instructor. LS-792-2-0835

LS 799. Problems in Recreation. (Var.). Pr.: Background of courses needed for problem undertaken. LS-799-3-0835

Graduate credit

LS 862. Leisure Counseling. (3) II. On sufficient demand. The development of leisure counseling models for use in community and institutional recreation programs and skills and competencies in assessing, interviewing, and counseling individuals and groups in the use of leisure experiences. Pr.: LS 725 or EDAF 858. LS-862-0-2103

LS 896. Topics in Recreation. (1-4). LS-896-3-0835

LS 897. Research in Recreation. (Var.). Pr.: Sufficient training to carry on the line of research undertaken. LS-897-4-0835

LS 898. Master's Report. (1-4). LS-898-4-0835

LS 899. Master's Thesis. (1-6). LS-899-3-0835

Physics

Chander Bhalla,* head of department

Professors Bark,* Bhalla,* Cocke,* Compaan,* Curnutte,* Dale,* Dragsdorf,* Eck,* Folland,* Gray,* Lee,* Legg,* Manney,* McGuire,* Richard,* Spangler,* and Zollman;* Associate Professors Lin,* Sorensen,* and Weaver;* Assistant Professors Hadjipanayis,* Hagmann,* and Rahman;* Research Associates Dillingham, Johnson, Knoll, Manney, Stockli, Taylor, Trott, and Wong; Emeriti: Professors Cardwell,* Ellsworth,* and Williams;* Associate Professors Chapin* and Crawford;* Instructor Green.

Physics is a quantitative science based on observation and experiment. Students of physics learn, often by performing experiments themselves, how a body of experimental data suggests an experimental law. Then they see how this experimental law can be generalized and tested by further experiment. However, it is as the originator of the next step in the method of science that physics emerges as the foundation of our technological age. The collection of experimental laws is studied and when properly generalized and tested is unified into a fundamental physical principle.

Undergraduate study

A major in physics equips a liberal arts student with a broad education which is uniquely adapted to our time. The physics curriculum provides a broad science background suitable for the creative application of science and mathematics to interdisciplinary problems. Although physics does not exclude the intuitive mind, the emphasis on mathematics tends to favor the more analytically inclined.

A student of physics may obtain either a bachelor of arts or a bachelor of science degree with a major in physics. In addition to the general requirements for the bachelor of arts or bachelor of science degree a physics major must complete the following core courses:

PHYS 100	Undergraduate Physics Seminar I	1
PHYS 150	Undergraduate Physics Seminar II	1
PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5
PHYS 506	Physics Laboratory I	3
PHYS 522	Mechanics I	3
PHYS 532	Electricity & Magnetism I	3
PHYS 551	Atomic Physics	3
PHYS 636	Physical Measurements Instrumentation	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
MATH 222	Analytic Geometry & Calculus III	4
MATH 240	Elementary Differential Equations	4
	Science electives	9

The nine hours of science electives may be selected with approval of the physics department undergraduate advisor from courses, 400 level or higher, in the departments of chemistry, computer science, geology, mathematics, physics, statistics, the Division of Biology, the College of Engineering and other departments as appropriate to the student's program. The courses selected to satisfy the science elective requirement should contribute to the student's educational goals and must be approved by the Department of Physics.

Transfer students

The flexibility of the physics curriculum permits individual advisement, on the basis of studies completed, for students who transfer into the curriculum from other majors, community colleges, or other universities.

A five-year dual degree program in physics and mechanical engineering is available and similar dual degree programs can be arranged with physics and electrical engineering, or nuclear engineering or business administration. Interested students should inquire about these programs with the Department of Physics.

Graduate study

The Department of Physics offers work leading to the degrees master of science and doctor of philosophy. Students planning a career in research or teaching physics in a college or university should plan a program leading to an advanced degree. Students planning a career in teaching physics at high school or community college level should consult with the College of Education for information on programs in physics and physical science teaching.

For admission with full graduate standing into an advanced degree program in physics, a student must have completed undergraduate courses equivalent to those in the undergraduate physics core described above. Prospective graduate students whose undergraduate training does not meet these requirements may be admitted on a provisional basis. Such students are required to remedy deficiencies in undergraduate preparation by completing the undergraduate courses without receiving graduate credit.

Information on the undergraduate and graduate programs, the supporting facilities, financial support, and the research activities in physics may be obtained from the head of the Department of Physics. Some of the major items of scientific equipment are described under the heading "Research Resources" earlier in this catalog.

Courses in physics

PHYS 017. Colloquium in Physics. (0) I, II. Weekly lectures on topics of current interest in physics by faculty and visiting scientists. PHYS-017-0-1902

Undergraduate credit

PHYS 100. Undergraduate Physics Seminar I. (1) I. Topics of special interest to freshmen majoring in physics. Subjects discussed include possible careers in physics, current research at KSU, and selected developments illustrating the methodology of physics. PHYS-100-2-1902

PHYS 101. The Physical World I. (3) I, II, S. The courses The Physical World I and II are designed to present a nonmathematical overview of the physical sciences for students who have little or no previous physical science. The Physical World I is principally physics and atomic theory. The observations and phenomena are simple and basic; no complex equipment is used. Three hours lec. a week. Open only to freshmen, sophomores, and first semester transfer students. Not available for credit to students who have credit in PHYS 106. PHYS-101-0-1901

PHYS 102. The Physical World II. (3) I, II, S. Continuation of PHYS 101. The Physical World II presents an overview of astronomy, geology, chemistry, and molecular biology. Three hours lec. a week. Not open to seniors. Pr.: PHYS 101. PHYS-102-0-1901

PHYS 103. The Physical World I Laboratory. (1) I, II, S. Two hours lab a week. Pr. or conc.: PHYS 101. PHYS-103-1-1901

PHYS 104. The Physical World II Laboratory. (1) I, II. Two hours lab a week. Pr. or conc.: PHYS 102. PHYS-104-1-1901

PHYS 106. Physics Concepts. (4) I. An introductory course in physics which emphasizes the topics of physics normally presented to elementary school children. A qualitative approach with integrated laboratory, this course is recommended for students preparing for careers as elementary school teachers. Not available for credit to students who have completed PHYS 101. PHYS-106-1-1901

PHYS 107. Physical Science Colloquium. (2). Offered by Telenet. Topics in physical science chosen to illustrate current research of scientists and methods used to study the physical universe. At each offering of this course a syllabus will be available giving the topics to be studied and the details of administration of the course. May be repeated once. Not open to physics majors. PHYS-107-0-1901

PHYS 113. General Physics I. (4) I, II, S. A basic development of the principles of mechanics, heat, fluids, oscillations, waves and sound. Emphasis is placed on conceptual development and numerical problem solving. Two hours lec., one hour rec., one hour quiz and two hours lab a week. Pr.: MATH 150 or one and one-half units of high school algebra and one unit high school trigonometry. PHYS-113-1-1902

PHYS 114. General Physics II. (4) I, II, S. The continued treatment of the fundamentals of electricity and magnetism, light and optics, atomic and nuclear physics. These concepts are used to understand D.C. and A.C. circuits, motors, and generators. Emphasis is placed on conceptual development and problem solving. Two hours lec., one hour rec., one hour quiz, and two hours lab a week. Pr.: PHYS 113. PHYS-114-1-1902

PHYS 115. Descriptive Physics. (4) I, II. A one-semester course in physics covering mechanics, electricity, heat, light, sound, and atomic theory. It presents a survey of the major fields of physics with a concentration on how physicists work to understand and describe physical phenomena. Three hours lec., one hour quiz, and two hours lab a week. Pr.: High school algebra. PHYS-115-1-1902

PHYS 125. Physics for Musicians. (3) II. Selected topics applied to the physics of music and musical instruments. PHYS-125-0-1902

PHYS 150. Undergraduate Physics Seminar II. (1) II. Continuation of PHYS 100. PHYS-150-2-1902

PHYS 191. Descriptive Astronomy. (3) I, II, S. A qualitative study of the sun and planets, stars and galaxies; a survey of what is known about the universe and how it is known. PHYS-191-0-1911

PHYS 193. Descriptive Meteorology. (3) I, II. Nontechnical treatment of the fundamentals of modern meteorology and associated physical processes. PHYS-193-0-1913

PHYS 213. Engineering Physics I. (5) I, II. Mechanics and heat; for students of science and engineering. Two hours lec., two hours rec., one hour quiz, and two hours lab a week. Pr. or conc.: MATH 221. PHYS-213-1-1902

PHYS 214. Engineering Physics II. (5) I, II. Sound, electricity, magnetism, light and modern physics; for students of science and engineering. Two hours lec., two hours rec., one hour quiz, and two hours lab a week. Pr.: PHYS 213, MATH 221. PHYS-214-1-1902

PHYS 300. Physics in Relation to Other Disciplines. (1-3). On sufficient demand. Variable content, offered only by prearrangement with the physics department and with the instructor. A brief syllabus will be available for each offering of PHYS 300 outlining the objectives and organization of the course for the semester in which offered. Pr.: Consent of instructor. PHYS-300-3-4900

PHYS 301. Physics Honors Seminar. (1-3). On sufficient demand. Open only to students in the Arts and Sciences Honors Program. Other students may be enrolled with permission of the instructor. PHYS-301-0-1902

PHYS 400. Independent Study in Physics. (1-3) I, II, S. Independent theoretical or experimental investigation of a topic for physics majors or for a Senior Honors Thesis. May be repeated for credit up to a maximum of six hours. Pr.: Junior standing and consent of instructor. PHYS-400-3-1902

PHYS 451. Modern Physics. (3) II. A non-mathematical introduction to twentieth century physics: relativity, quantum mechanics, the physics of solids, and fundamental particles. Pr.: PHYS 101 or PHYS 106, or equiv. PHYS-451-0-1902

PHYS 460. Undergraduate Topics in Physics. (1-6). Special topics in physics not completely treated in other courses. On sufficient demand. Pr.: PHYS 114 or equiv. PHYS-460-0-1902

PHYS 495. Astronomy. (3). Topics in modern astronomy. Use of a telescope for observational astronomy will be emphasized. Two hours lec. and two hours independent observational astronomy a week. Pr.: PHYS 191. PHYS-495-1-1911

Undergraduate and graduate credit in minor field

PHYS 506. Physics Laboratory I. (3) I. See PHYS 616. One hour rec. and six hours lab a week. Pr.: One year of college physics. PHYS-506-1-1902

PHYS 515. Physics for Science Teachers. (2-3). Study of current topics in physics, with laboratory experience and demonstration of the processes or phenomena under consideration. Topics and activities will be directed toward providing teachers with material for demonstrations and student experiments or projects. Examples of topics are: solar power, laser applications, holography, and sub-nuclear particles, relativity, or the historical development of some physical concept. May be repeated for a maximum of six hours credit. One year of college physics. PHYS-515-0-1902

PHYS 522. Mechanics I. (3) I. Principles of statics and dynamics of particles and rigid bodies by the methods of the calculus. Pr.: PHYS 214, MATH 240 or conc. enrollment. PHYS-522-0-1902

PHYS 523. Mechanics I Recitation. (2) I. Discussion section for problems presented in PHYS 522. Pr.: Students must be concurrently enrolled in PHYS 522. PHYS-523-0-1902

PHYS 525. Physics of Sound. (3) I. Topics covered include the properties of sound waves, the harmonic structure of sound, sound perception, room acoustics, the acoustical, mechanical, and electrical factors influencing sound reproduction, and factors involved in speaker enclosure design. Pr.: PHYS 114 or 214. PHYS-525-0-1901

PHYS 532. Electricity and Magnetism I. (3) II. A study of electric and magnetic fields using the calculus. The development and uses of Maxwell's equations. Pr.: PHYS 214, MATH 240 or conc. enrollment. PHYS-532-0-1902

PHYS 551. Atomic Physics. (3) II. An introduction to contemporary theories and problems in physics. Pr.: PHYS 214; MATH 222. PHYS-551-0-1902

PHYS 553. Introduction to the Physics of Lasers. (3) I, II. A study of the physics of lasers. Survey of current laser systems. Technological applications. Pr.: PHYS 214. PHYS-553-0-1902

PHYS 561. Geophysics. (3) II. In alternate years. Principles and methods of exploration geology by physical methods. Pr.: PHYS 114 or 214; MATH 221. PHYS-561-0-1916

Undergraduate and graduate credit

PHYS 611. Introductory Quantum Mechanics I. (3) I. Methods of quantum mechanics and solution of selected problems in atomic, molecular, solid-state, and nuclear physics. Special theory of relativity. Pr.: PHYS 522, 551; MATH 240. PHYS-611-0-1902

PHYS 612. Introductory Quantum Mechanics II. (3) II. Continuation of PHYS 611. Pr.: PHYS 611. PHYS-612-0-1902

PHYS 616. Advanced Physics Laboratory. (1-3) II. The courses PHYS 506, 516, and 616 are designed to give the advanced student an opportunity to perform experiments of historical and current significance and to develop skill in making precise physical measurements involving the use of high-grade mechanical, optical, electrical, and thermal instruments. Pr.: PHYS 506 or equiv. PHYS-616-0-1902

PHYS 621. Mechanics II. (3) II. Continuation of PHYS 522. Pr.: PHYS 522. PHYS-621-0-1902

PHYS 631. Electricity and Magnetism II. (3) I. Continuation of PHYS 532. Pr.: PHYS 532. PHYS-631-0-1902

PHYS 635. Plasma Physics. (3) I. In alternate years. (see NE 635) Fundamental properties of plasmas; motion of ions and electrons in electromagnetic fields; plasmas as magnetohydrodynamic fluids; plasma waves; diffusion phenomena in plasmas; electric resistivity of plasmas; equilibrium and plasma stability, kinetic theory of plasmas. Three hours rec. a week. Pr.: PHYS 532 or EE 557, and PHYS 621. PHYS-635-0-1902

PHYS 636. Physical Measurements Instrumentation. (4) II. A laboratory-oriented course to acquaint students with electronic circuits, their interfacing with measuring instruments, and their use in making physical measurements. Two hours lec. and six hours lab a week. Pr.: PHYS 214. PHYS-636-1-1902

PHYS 641. Nuclear Physics. (3) II. In alternate years. Modern theories of nuclear physics. Pr.: PHYS 611. PHYS-641-0-1904

PHYS 651. Introduction to Optics. (3) I. In alternate years. Introduction to modern concepts in the study of optics: electromagnetic waves, interference, coherence, Fraunhofer and Fresnel diffraction, holography, non-linear optics, lasers, photon counting. Three hours lec. a week. Students desiring simultaneous laboratory experience with the phenomena discussed should enroll for one or two hours in PHYS 616. Pr.: PHYS 532 or EE 557. PHYS-651-0-1902

PHYS 671. Thermodynamics and Statistical Physics. (3) II. In alternate years. Pr.: PHYS 522; MATH 240. PHYS-671-0-1902

PHYS 681. Semiconductor Physics. (3). The physics of conduction in homogeneous semiconductors and semiconductor device structures. Pr.: At least senior standing in physics or electrical engineering. PHYS-681-0-1902

PHYS 691. Astrophysics. (3). A quantitative study of the sun and stars; structure and evolution; intrinsic properties; solar activity; galaxies; chemical evolution. Pr.: PHYS 522, 532. PHYS-691-0-1912

PHYS 701. Journal Club. (Var.) I, II. Seminar in current topics in physics. Pr.: Graduate standing in physics. PHYS-701-2-1902

PHYS 707. Topics in Physics. (Var.) I, II, S. Special topics courses. Topics and credits announced for the semester in which offered. May be given in conjunction with lecture series by visiting scientists. Pr.: Graduate standing or senior standing and consent of instructor. PHYS-707-3-1902

PHYS 711. Introduction to Theoretical Physics. (3) I. Pr.: PHYS 621. PHYS-711-0-1902

PHYS 731. Electrodynamics I. (3) I. In alternate years. Pr.: PHYS 631. PHYS-731-0-1902

PHYS 751. Atomic Spectra. (3) I. In alternate years. Atomic energy levels and the origin of spectra. Pr.: PHYS 611. PHYS-751-0-1902

PHYS 752. Molecular Spectra. (3). Molecular energy levels and the origin of spectra. Pr.: PHYS 611. PHYS-752-0-1903

PHYS 781. X-ray and Crystal Physics. (3) II. In alternate years. Pr.: PHYS 532. PHYS-781-0-1902

PHYS 782. Introduction to Solid State Physics. (3) II. Pr.: PHYS 611. PHYS-782-0-1902

PHYS 786. X-ray Laboratory. (1) II. In alternate years. Three hours lab a week. Pr. or conc.: PHYS 781. PHYS-786-1-1902

Graduate credit

PHYS 800. Problems in Physics I. (1) II. Independent study of the solution of advanced problems in physics at a level appropriate to the M.S. degree. Pr.: Graduate standing and consent of instructor. PHYS-800-3-1902

PHYS 808. Advanced Problems. (Var.) I, II, S. Independent study in a special problem in physics at the graduate level chosen with the advice of a faculty mentor. Pr.: Graduate standing and consent of instructor. PHYS-808-3-1902

PHYS 811. Quantum Mechanics I. (3) I. Pr.: PHYS 611, 711, 821. PHYS-811-0-1902

PHYS 821. Advanced Dynamics. (3) I. In alternate years. Pr.: PHYS 711. PHYS-821-0-1902

PHYS 899. Research in Physics. (Var.) I, II, S. Master's level research. Pr.: Consent of instructor. PHYS-899-4-1902

PHYS 910. Problems in Physics II. (1). Independent study of the solution of advanced problems in physics at a level appropriate to the Ph.D. degree. Pr.: PHYS 800 and consent of instructor. PHYS-910-3-1902

PHYS 911. Quantum Mechanics II. (3) II. Pr.: PHYS 811. PHYS-911-0-1902

PHYS 912. Advanced Quantum Mechanics. (3). Relativistic quantum mechanics; scattering theory; second quantization and the many-body problem; introduction to quantum electrodynamics. Pr.: PHYS 911. PHYS-912-0-1902

PHYS 913. Advanced Topics in Mathematical Physics. (3). Critical studies of selected advanced topics. May be repeated once for credit. Pr.: PHYS 711. PHYS-913-0-1902

PHYS 914. Quantum Field Theory. (3). On sufficient demand. Pr.: PHYS 811. PHYS-914-0-1902

PHYS 931. Electrodynamics II. (3) II. In alternate years. Pr.: PHYS 731. PHYS-931-0-1902

PHYS 941. Advanced Nuclear Physics. (3). Pr.: PHYS 641, 811. PHYS-941-0-1904

PHYS 943. Advanced Topics in Nuclear Physics. (3). Critical studies of selected advanced topics. May be repeated once for credit. Pr.: PHYS 641. PHYS-943-0-1904

PHYS 951. Advanced Topics in Molecular Spectroscopy. (3). Critical studies of selected advanced topics. May be repeated once for credit. Pr.: PHYS 752. PHYS-951-0-1903

PHYS 952. Advanced Topics in Optics. (3). Critical studies of selected advanced topics. May be repeated once for credit. Pr.: PHYS 651. PHYS-952-0-1902

PHYS 953. Advanced Topics in Atomic Interactions. (Var.). Critical studies of advanced topics in atomic interactions. Pr.: PHYS 612. PHYS-953-3-1904

PHYS 971. Statistical Mechanics. (3) II. In alternate years. Pr.: PHYS 611, 671, 821. PHYS-971-0-1902

PHYS 981. Solid State Physics. (3). Pr.: PHYS 782, 971, 911, or conc. enrollment. PHYS-981-0-1902

PHYS 982. Advanced Topics in Solid State Physics. (3). Critical studies of selected advanced topics. May be repeated once for credit. Pr.: PHYS 782. PHYS-982-0-1902

PHYS 983. Advanced X-ray Physics. (3). On sufficient demand. Pr.: PHYS 781, MATH 240. PHYS-983-0-1902

PHYS 999. Research in Physics. (Var.) I, II, S. Doctoral level research. Pr.: Consent of instructor. PHYS-999-4-1902

Political Science

Naomi B. Lynn,* head of department

Professors Hajda,* Lynn,* W. Richter,* Suleiman,* and Williams;* Associate Professors Gustafson,* Linford,* and Unekis;* Assistant Professors Michie,* L. Richter,* and Waugh.*

Undergraduate study

The major in political science acquaints the student with the political aspects of society and encourages the student to develop a critical and imaginative spirit with which to look at public issues. Because political issues reflect the broader contemporary situation, the program in political science also provides the foundation for a liberal education on which to build a continuing, responsible interest in political activity and public affairs. At the same time, scientific training in the analysis of political problems is intended to equip the student with the skills necessary to choose among a wide variety of careers. Qualified students should be stimulated to seek advanced training in political science at the graduate level.

A political science major should complete a broad liberal arts program which includes study in related social sciences such as economics, history, psychology, sociology, anthropology, and geography. The political scientist should also develop awareness of the intimate relationships between social and physical science. In addition, the major will find familiarity with statistics and mathematics is indispensable in using the tools now available for describing and explaining political phenomena.

Advisory and special services

Departmental

Several members of the department have backgrounds in non-academic careers—including national and international government service, business, party politics, and journalism—besides professional training in political science. Students contemplating careers in these and other fields will find non-academic perspectives available to help them in their choices.

Pre-law program

While pre-law advising is located in the dean of arts and sciences office, 117 Eisenhower Hall, additional assistance for political science majors is available within the department. The pre-law advisor is Professor Orma Linford, 219C Kedzie Hall.

Public administration option

The political science department offers a public administration option within the political science major. Its goal is to provide political science majors with a more focused curriculum which will help them prepare for public service careers. Interested students should see Professor William L. Waugh, 206 Kedzie Hall.

International Trade Studies

The department participates in the University-wide International Trade Studies (see detailed information under Graduate School in this catalog).

Specialized curricula

The department takes part in several interdepartmental programs whereby students may coordinate course work around a specific set of phenomena. Two such firmly established programs include:

South Asia area studies. The department participates in the University-wide South Asia area studies (see detailed information under South Asia Studies, in this catalog).

Armed forces and society. Political science and several other departments offer coordinated course work in military phenomena and security processes, ranging from the technology of war and military policy-making to the problems of civilian-military relations in peacetime and arms control. Some of the relevant courses are in history, geography, psychology, sociology, economics, and nuclear engineering.

Requirements for the major

A major consists of a minimum of 30 credit hours in political science distributed as follows: three courses from among POLSC 301, Introduction to Political Thought, POLSC 325, United States Politics, POLSC 333, World Politics, and POLSC 344, Introduction to Comparative Politics. Also, majors are required to take at least one 500 level or above course in each of the following four areas of political science: American government and politics; comparative government and politics; international relations; and political thought. Only three hours of the major are allowed to be readings, problems, internships, or similar courses that do not involve regular, stated meetings of the class.

Students taking the public administration option are required to complete a minimum of 33 hours and must meet all requirements for the major. The core courses required of all students taking the public administration option are: POLSC 377, Introduction to Public Policy, POLSC 507, Introduction to Public Administration, POLSC 608, Public Personnel Administration, POLSC 737, Politics of Budgeting. The program has a general administration concentration with enough flexibility to permit students to take electives in supporting areas such as business, social work, corrections, regional and community planning, health, physical education, and recreation. The choice of electives is done with the advice and supervision of the public administration advisor.

Information for non-majors

To encourage the widest possible undergraduate involvement in systematic political analysis, most political science courses numbered 100 through 799 are open to non-majors without prerequisite courses and without prejudice to non-majors. As a discipline, the study of politics is expansive enough to permit intraclass adjustments to different backgrounds and objectives, while maintaining the rigorous inquiry of social science.

Students are encouraged to contact political science faculty members and members of Pi Sigma Alpha, an honorary student organization, for additional advice and information about courses.

Graduate study

The Department of Political Science offers work leading to the master of arts and Master of Public Administration degrees.

Master of arts (30 hours)
Graduate work in political science is offered in American government and politics, comparative government and politics, international relations, and political thought. All candidates for the master of arts degree are required to take the following:

POLSC 800	Seminar: Scope & Methodology of Political Science	3

Two seminars from:

POLSC 805	Seminar: American Government Problems	3
POLSC 821	Seminar: Political Thought	3
POLSC 831	Seminar: Public Administration	3

Two seminars from:

POLSC 811	Seminar: International Politics	3
POLSC 841	Seminar: Comparative Politics	3
POLSC 842	Seminar: Comparative Ideologies	3

No more than 4 hours of "non-class" seminars or courses (e.g., readings, problems, internships) are allowed to count toward the 30 hours required for the M.A.

Written comprehensive examinations

An oral defense of the thesis (Option A), report (Option B), or seminar papers (Option C)

Students may choose, in consultation with their advisors, one of three programs leading to the master of arts degree.

Option A requires 30 hours of graduate credit including 6 hours of credit for a thesis. Of the remaining 24 hours, at least 18 hours must be in political science.

Option B requires 30 hours of graduate credit including 2 hours of credit for a written research report. Of the remaining 28 hours, at least 19 hours must be in political science.

Option C requires 30 hours of graduate credit in political science of which at least 4 courses should be 800 level seminars taken from at least three different professors. In addition, students in this option should write 4 research seminar papers acceptable to the professors involved.

Master of Public Administration (42 hours)
Students working on MPAs at KSU are required to take 36 hours of course work and 6 hours of internship. Students with little or no educational background or professional experience in the common and advanced curriculum components are expected to devote the equivalent of two full academic years to complete the master's degree program. Where students have had strong undergraduate preparation in the common curriculum requirements or have been engaged in significant managerial activities, some of the subject matter requirements might be appropriately waived or reduced. No one may receive more than 6 hours credit for work-study/internship experience. Mid-career students presently employed in the public sector will complete a project in lieu of the internship requirement.

Public administration and public policy core
Required courses

POLSC 608	Public Personnel Administration	3
POLSC 710	Policy Analysis & Evaluation	3
POLSC 737	Politics of Budgeting	3
POLSC 831	Seminar: Public Administration	3

Area specialization (12 hours minimum)
Students are encouraged to develop a specialty such as labor relations, international administration, planning, or public finance.

Research methods (3 hours minimum)

POLSC 707	Research Methods in Political Science	3
	or	
POLSC 800	Seminar: Scope & Methodology of Political Science	3

Graduate seminars (6 hours required)
Two 800 level graduate seminars in two of the following areas:- international relations, comparative politics, and political theory.

Public administration/political science electives (a minimum of one course)
See catalog course listing

Written comprehensive examinations

POLSC 897	**Professional Practicum**	**6**

Political science
Undergraduate credit

POLSC 107. Political Science Colloquium. (2) I, II, S. Offered by Telenet. Topics in political science chosen to illustrate current research of political scientists and approaches to the study of politics. Each time the course is offered, a syllabus will outline the topics to be studied and the way the course will be administered. May be repeated once. Not open to political science majors. POLSC-107-0-2207

POLSC 110. Introduction to Political Science. (3). Introduction to politics, public policy, and governmental processes. Distribution and use of political power, political thought, public opinion, groups, parties, institutions, public law, careers in politics, and related topics. POLSC-110-0-2207

POLSC 111. Introduction to Political Science. (Honors). (4). Introduction to politics, public policy, and governmental processes. Distribution and use of political power, political thought, public opinion, groups, parties, institutions, public law, careers in politics, and related topics. Pr.: Membership in Arts and Sciences Honors Program. POLSC-111-0-2207

POLSC 301. Introduction to Political Thought. (3) I. A broad overview of the field of political thought, including consideration of major themes and leading writers in western political philosophy, some non-western political thought, modern ideologies, and empirical theory. Pr.: Sophomore standing. POLSC-301-0-2207

POLSC 321. Kansas Politics and Government. (3). An introduction to the political institutions of the political behavior in and surrounding, and the public policies flowing from governmental units in the state of Kansas. POLSC-321-0-2207

POLSC 325. United States Politics. (3). The national government with emphasis on constitutional principles, basic structure, functions, and the political process. POLSC-325-0-2207

POLSC 333. World Politics. (3). Introduction to the study of politics among nations, including a survey of major contemporary problems of world politics and focusing on the international struggle for power and order. POLSC-333-0-2207

POLSC 344. Introduction to Comparative Politics. (3). Comparative analysis of politics in both "developed" and "developing" countries. Though some attention will be given to abstract and theoretical concepts, the emphasis will be on the actual political process in the countries selected for study. POLSC-344-0-2207

POLSC 350. Current Political Issues. (2) I, II. Each week a different political science faculty member explains and analyzes current developments in state, national, and international affairs, utilizing the news media as text material. Not for major credit. May be repeated once. POLSC-350-0-2207

POLSC 355. Contemporary Issues. (3). Study and analysis of selected political topics of immediate relevancy and concern. May be repeated only one time. POLSC-355-0-2207

POLSC 366. Practical Politics. (3) II. Strategies and techniques of running for office, organizing a campaign, mobilizing community resources, direct action lobbying, and related practical aspects of local level citizen politics. POLSC-366-0-2207

POLSC 377. Introduction to Public Policy. (3) I. The process of public policy formation and analysis with emphasis on theories of decision-making, the relationship between decisions taken, values maximized and the social impact of these decisions. Pr.: POLSC 110 or 325 or another social science course. POLSC-377-0-2207

POLSC 399. Honors Seminar in Political Science. (1-3). POLSC-399-0-4900

POLSC 401. Topics in Politics. (1-3). Different subject areas in politics are selected for intensive study. May be repeated for a total of six hours with advisor's approval. POLSC-401-0-2207

POLSC 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the Arts and Sciences Honors Program. POLSC-499-4-2207

Undergraduate and graduate credit in minor field

POLSC 501. Political Behavior. (3). An examination and explanation of the basic terms and distinctions necessary for the study of politics, government and political behavior emphasizing the dimensions of political behavior, including politicization, identification, ideology, participation, socialization, class, structure, and situations. Pr.: POLSC 110 or 325, or sophomore standing. POLSC-501-0-2207

POLSC 502. Television and Public Policy. (3) II. Television as a political institution, emphasizing TV structure, contents, and effects for political thought and public policy; comparative analysis of television with other mass media and non-media influences on political behavior. Pr.: POLSC 110 or POLSC 325, and sophomore standing, or, appropriate vocational experience with consent of instructor. POLSC-502-0-2207

POLSC 503. The People and the Courts. (3) I. The concept and administration of justice in American democracy, with emphasis on the roles of participants in the legal process, organization of the courts, and impact of social and political change on the legal system; American attitudes toward the law. Pr.: POLSC 325. POLSC-503-0-2207

POLSC 505. Introduction to the Civilization of South Asia I. (3). An interdisciplinary survey of the development of civilization in South Asia, including consideration of the geographical and demographic context, dominant philosophical and social concepts, social and political institutions, literature and historical movements. (Same as HIST 505, ECON 505, SOCIO 505, ANTH 505.) POLSC-505-0-2207

POLSC 506. Introduction to the Civilization of South Asia II. (3). Interdisciplinary survey of recent and contemporary civilization in India, Pakistan, Ceylon, Nepal, and Afghanistan, including recent history, current economy, religion, culture, languages and literature, geography, social and political structures and ideas. (Same as ECON 506, HIST 506, SOCIO 506, ANTH 506.) POLSC-506-0-2207

POLSC 507. Introduction to Public Administration. (3). The basic concepts of public administration, with emphasis on orientation for citizen understanding; the place of administration and the role of the administrator in the American political process; the organization and activities of government in carrying out public policy; administrative functions, organization, accountability, finance and personnel. Pr.: POLSC 110 or 325 or ECON 110. POLSC-507-0-2207

POLSC 508. The Mass Media and Political Campaigns. (3) I. Examines the role of the mass media in the electoral process. Dynamics of voter decision making and the impact of the media on voter attitudes and choices. Pr.: POLSC 325. POLSC-508-0-2207

POLSC 511. Contemporary Chinese Politics. (3). Principal components of Communist Chinese ideology, conditions determining organizational structure, composition of present leadership, role of social forces, impact of external relations on other Asian nations and on the major world powers. POLSC-511-0-2207

POLSC 520. State and Local Government. (3). The American system of federalism with emphasis on the government and politics of the American states and their subdivisions. Pr.: POLSC 110 or 325 or sophomore standing. POLSC-520-0-2207

POLSC 521. Agricultural Politics. (3). Introduction to the political-cultural problems of rural, including small town, America as well as to the public policies designed for meeting these problems. Emphasis will be placed upon the nature of politics shaping the present and future of rural and small town Kansas. Pr.: POLSC 110 or 325 or sophomore standing. POLSC-521-0-2207

POLSC 545. The Politics of Developing Nations. (3). Comparative analysis of politics in emergent states with emphasis on processes of modernization and nation building. Pr.: POLSC 110 or 344 or sophomore standing. POLSC-545-0-2207

POLSC 555. Senior Honors Seminar. (3). Open to senior majors who have attained a 3.0 grade point average in political science. POLSC-555-0-2207

American government and politics Undergraduate and graduate credit

POLSC 608. Public Personnel Administration. (3) II. Policy aspects of public personnel administrations at all levels of government with specific attention given to personnel issues unique to the public sector. Court decisions on the rights of public employees, public unionism, civil service systems, and public service ethics in a democracy. Pr.: POLSC 325 or 507, or ECON 110 and junior standing. POLSC-608-0-2207

POLSC 701. Politics of Equality. (3) I. Public policy and socio-economic equality. Wealth and income distribution, social insurance programs, and ethnic relations. Conditions and institutions conducive to equality with emphasis on elites and power. Pr.: POLSC 377 or POLSC 507. POLSC-701-0-2207

POLSC 702. Political Sociology. (3). An introduction to the principles of political sociology; theories of politics and sociology processes of political sociology; participation within and outside established organizational channels, recruitment of elites, communication and influence, power, decision-making and policy outputs. Data will be presented from a cross-national perspective. Pr.: SOCIO 211; POLSC 110 and junior standing or consent of instructor. (Same as SOCIO 702.) POLSC-702-0-2207

POLSC 703. Political Parties and Elections. (3). Origins, structure and function of political parties. Dynamics of the two-party system. Roles of third parties. Analysis of election results and voting behavior. POLSC-703-0-2207

POLSC 705. The American Presidency. (3). The presidency as an institution, its evolution, Congressional relationships, executive organization. POLSC-705-0-2207

POLSC 706. Sex and Politics. (3). Analysis of the role of sex in political behavior, including sexual differences in voting and political participation, legal and cultural restrictions on women's rights and political activity, and women's liberation and other sex-based political movements. POLSC-706-0-2207

POLSC 707. Research Methods in Political Science. (3). Principles of research design, measurement of political phenomena, methods for collecting and analyzing political data, and utilization of computers in political research. Pr.: STAT 320 or STAT 330. POLSC-707-0-2207

POLSC 708. Administrative Law. (3) II. Legal analysis of the rule-making, adjudicatory, and enforcement functions of administrative agencies, with emphasis on constitutional framework, judicial review, requirements of procedural fairness, and rights of public employees. Pr.: POLSC 507 or POLSC 520. POLSC-708-0-2207

POLSC 709. The Politics of Intergovernmental Relations. (3) I. An analysis of the dynamics of the federal system. Interactions among local, state, and federal governments will be examined with emphasis upon governmental policy and program management. Pr.: POLSC 507 or 520 or SOCIO 531. POLSC-709-0-2207

POLSC 710. Policy Analysis and Evaluation. (3) II. The relationship between public policy and the distribution of values, goods, and services in society, including a study of policy evaluation. Students analyze policies in an area of choice; e.g., agriculture, business, health, income, trade. Pr.: POLSC 325 or 507 or junior standing. POLSC-710-0-2207

POLSC 711. The Legislative Process. (3). Legislative decision making in modern democracy with emphasis on the United States, the concept of representation, and political behavior of participants in the legislative process. POLSC-711-0-2207

POLSC 713. Defendant's Rights. (3) II. Constitutional provisions of due process in criminal cases; statutory protections and judicial rules; analysis of U.S. Supreme Court opinions concerning the rights of persons accused of crimes at all stages in the criminal process. Pr.: POLSC 503 or PHILO 415 or SOCIO 661 or ENGL 401. POLSC-713-0-2207

POLSC 714. Constitutional Law I. (3) I. Principles of the American political system as prescribed by the Constitution and interpreted by Supreme Court decisions, with emphasis on the institutions and powers of the national government. Pr.: POLSC 503 or HIST 555 or ENGL 401. POLSC-714-0-2207

POLSC 715. Constitutional Law II. (3) II. The Constitution as a limitation on governmental power, with emphasis on Supreme Court decisions defining fundamental liberties, property rights, and the requirement of substantive due process. Pr.: POLSC 503 or HIST 555 or ENGL 401. POLSC-715-0-2207

POLSC 716. Discrimination and the Law. (3) I. Equal protection under the law, as provided by the Constitution, statutes, regulations, and judicial decisions, with special attention to discrimination on the basis of race and sex. Pr.: POLSC 503 or HIST 555 or HIST 539 or POLSC 706 or SOCIO 570. POLSC-716-0-2207

POLSC 717. The Administrative Process. (3). Public administration treated as a process of organization and methods management with emphasis on conditions, elements, and problems common to all levels and functions of bureaucracy. POLSC-717-0-2207

POLSC 718. Urban Politics. (3). Fundamental problems of political power and decision-making in urban-suburban governmental settings. POLSC-718-0-2207

POLSC 719. National Security Policy and Process. (3). Formation and management of contemporary U.S. security establishment and policies with emphasis on arms control, competition for resources, civilian-military relations, and interaction among Congress, the President, and the bureaucracy. POLSC-719-0-2207

POLSC 735. Advanced Public Administration. (3) I. Theories of public administration as they relate to specific problems of administration with special emphasis on administrative decision making in the political environment. Evaluation of new legal and theoretical trends. Pr.: POLSC 325 or 507 or GENBA 420 or ECON 110 and junior standing. POLSC-735-0-2207

POLSC 737. Politics of Budgeting. (3) II. Focuses on the political aspects of developing budgets for federal, state, and local governmental agencies. Pr.: POLSC 507 or GENBA 420. POLSC-737-0-2207

Comparative government and politics
Undergraduate and graduate credit

POLSC 721. European Political Systems. (3). Comparative analysis of British democracy, totalitarianism, and contemporary Continental European political systems. POLSC-721-0-2207

POLSC 722. Latin American Politics. (3). Comparative analysis of selected political systems of Latin America emphasizing political inputs, political organization, and political outputs. Special consideration is given to problems of political change. POLSC-722-0-2207

POLSC 723. South Asian Political Systems. (3). Analysis of selected political systems of South Asia. POLSC-723-0-2207

POLSC 724. Middle Eastern Political Systems. (3). Comparative analysis of selected political systems in the Middle East including nationalism and the conflict of differing ideologies. Validity and usefulness of various theories of political development are tested. POLSC-724-0-2207

POLSC 725. Southeast Asian Political Systems. (3). Comparative analysis of selected political systems in Southeast Asia including consideration of problems of nationalism and political development. POLSC-725-0-2207

POLSC 726. African Political Systems. (3). Comparative analysis of selected political systems of sub-Sahara Africa, including consideration of problems of nationalism and political development. POLSC-726-0-2207

POLSC 727. The Soviet Political System. (3). Government and politics of the Soviet Union. POLSC-727-0-2207

POLSC 728. Comparative Security Establishments. (3). Politics of conceiving, organizing, using and reconciling military and related security forces as societal functions in the United States, selected other polities, and international organizations. POLSC-728-0-2207

POLSC 729. Administration in Developing Nations. (3). Administrative problems of developing nations of Asia, Africa, and Latin America, principal models for study of comparative public administration; programs in development administration. POLSC-729-0-2207

International relations
Undergraduate and graduate credit

POLSC 741. International Relations. (3). Analysis of the nature of international relations with emphasis on contemporary theories explaining the international behavior of states. POLSC-741-0-2207

POLSC 742. International Conflict. (3) II. The nature of political conflicts in the world and the "types" of such conflicts. Emphasis is placed on determining the "causes" of the various conflict types as well as providing the student with a better understanding of the conflict process from political dispute through the escalation stages to war. Pr.: POLSC 333 and junior standing. POLSC-742-0-2207

POLSC 743. American Foreign Policy. (3). Examination of American external relations since 1945 and evaluation of processes involved in the formulation and conduct of contemporary foreign policy of the United States. POLSC-743-0-2207

POLSC 745. International Politics of Europe. (3). Relationships among post-World War II European constitutional development, national politics, foreign policies and European communities, with attention to European considerations in global international politics. POLSC-745-0-2207

POLSC 747. International Law. (3). Theories of international law, and general problems, such as: recognition, responsibility, war crimes, sources, evidence, codification, and settlement of disputes. POLSC-747-0-2207

POLSC 749. International Defense Strategies. (3). Contemporary international strategies, and defense policies with emphasis on nuclear, conventional, and guerrilla war, arms control and disarmament, diplomatic and political roles of the military. POLSC-749-0-2207

POLSC 751. International Organization. (3). Structure, functions, values, and effectiveness of international organizations with emphasis on the United Nations, Common Market, and other regional arrangements. POLSC-751-0-2207

POLSC 752. International Politics of South Asia. (3). Consideration of regional problems of the South Asian area and international roles and foreign policies of South Asian states. POLSC-752-0-2207

POLSC 753. International Politics of the Middle East. Consideration of the Arab-Israeli conflict, inter-Arab relations, foreign policies of Middle Eastern states, and the impact of the major foreign powers on the area. POLSC-753-0-2207

POLSC 754. The Professional Diplomat and Foreign Policy Formulation. (3). Present day foreign policy formulation in the United States government, including especially the role therein of the professional diplomat and foreign affairs specialist. POLSC-754-0-2207

Political thought
Undergraduate and graduate credit

POLSC 761. Political Thought: Classical to 16th Century. (3). Systematic study of ideas about law, politics, and government of great philosophers of Western civilization from Greek antiquity to the 16th century. POLSC-761-0-2207

POLSC 763. Political Thought: Since the 16th Century. (3). Study of the development of Western political thought from the 16th century to the 20th century. POLSC-763-0-2207

POLSC 767. American Political Thought. (3). Political ideas underlying the American union, including the doctrine of rights, the nature of union, liberty, property, and democracy. POLSC-767-0-2207

POLSC 771. Modern Political Thought. (3). Study of contemporary political ideas and social thought. POLSC-771-0-2207

POLSC 775. Religion and Politics. (3). The history, theory, and development of church-state relationships in the United States. A theoretic and legal analysis of the relationship. POLSC-775-0-2207

Public administration option
Undergraduate and graduate credit

Public administration courses may be used to meet the requirements for the political science major as indicated under the listings for that area.

POLSC 377. Introduction to Public Policy. (3).
POLSC 507. Introduction to Public Administration. (3).
POLSC 608. Public Personnel Administration. (3).
POLSC 708. Administrative Law. (3).
POLSC 709. The Politics of Intergovernmental Relations. (3).
POLSC 710. Policy Analysis and Evaluation. (3).
POLSC 717. The Administrative Process. (3).
POLSC 729. Administration in Developing Nations. (3).
POLSC 735. Advanced Public Administration. (3).
POLSC 737. Politics of Budgeting. (3).

Readings and problems
Undergraduate and graduate credit

POLSC 784. Internship in Government, Public Administration, and Politics. (1-3). Supervised field work at the international, national, state, and local level of government or with political parties or other politically oriented voluntary organizations. May be repeated once. Pr.: Consent of instructor and a minimum of two courses in political science, at least one of which must be relevant to the internship area. POLSC-784-3-2207

POLSC 785. Readings in Political Science. (1-3). Students will undertake directed reading and discussion of a selected topic in political science. POLSC-785-3-2207

POLSC 790. Problems in Political Science. (1-3). Students will complete a research project and prepare an original paper under the supervision of a faculty member. Pr.: Consent of the instructor. POLSC-790-3-2207

POLSC 791. Topics in Political Science. (3) I, II. Extensive exploration of a specific problem in the areas of Political Thought, American Government, Comparative Politics, International Relations, and Public Administration. May be repeated for a total of six hours in two sub-fields. Since topics will cover different areas in political science, prerequisites will be determined by the department as appropriate when the course is offered. POLSC-791-0-2207

POLSC 799. Pro-Seminar in Political Science. (3). Study and analysis in various areas of the discipline with emphasis on critical evaluation of political conflicts and issues. Pr.: Junior or senior standing or consent of instructor. POLSC-799-0-2207

Graduate credit

POLSC 800. Seminar: Scope and Methodology of Political Science. (3). Exploration of theoretical foundations of political science, and critique of various analytical models in the study of political phenomena; construction and application of research designs and techniques. Required of all graduate students in political science. POLSC-800-0-2207

POLSC 805. Seminar: American Government Problems. (3). POLSC-805-0-2207
POLSC 811. Seminar: International Politics. (3). POLSC-811-0-2207
POLSC 821. Seminar: Political Thought. (3). POLSC-821-0-2207
POLSC 831. Seminar: Public Administration. (3). POLSC-831-0-2207
POLSC 841. Seminar: Comparative Politics. (3). POLSC-841-0-2207
POLSC 842. Seminar: Comparative Ideologies. (3). POLSC-842-0-2207
POLSC 897. Professional Practicum and Internship. (6) I, II, S. Readings, lectures, and interaction with practitioners, as well as directed off-campus work. POLSC-897-2-2207
POLSC 898. Master's Report. (2). POLSC-898-4-2207
POLSC 899. Master's Thesis. (6). POLSC-899-4-2207

Psychology

E. Jerry Phares,* head of department

Professors Cowan,* Griffitt,* Mitchell,* Perkins,* Phares,* Rappoport,* Rohles,* Samelson,* Shanteau,* Thompson,* and Uhlarik;* Associate Professors Barnett,* Downey,* Frieman,* Harris,* and Saal;* Assistant Professors Bristow,* Kiefer,* Knight,* and Lowman;* Emeritus: Professor Langford.

Undergraduate study

The undergraduate program at Kansas State University is a versatile program which is composed of a common core for all students. Beyond this common core, however, students may choose among several paths depending upon their more specific interests and goals.

The psychology curriculum is arranged with several functions in mind: to give the student, as a part of a liberal education, some familiarity with the principles, methods, and findings of psychology; to provide knowledge and skills requisite for advanced study at the graduate level; to offer valuable background for students preparing to work in a variety of professions and jobs, such as medicine, law, theology, business, teaching, engineering, industry, and organizational settings; and to provide academic work that will prepare the students to pursue careers in psychology.

The core

The undergraduate major requires STAT 330 and an additional 28 hours of course work, including:

PSYCH 015	Orientation to Psychology	0
PSYCH 110	General Psychology	3
PSYCH 250	Experimental Methods in Psychology	4
Two courses from:		
PSYCH 460	Information Processing & Memory	3
PSYCH 475	Principles of Learning & Motivation	3
PSYCH 480	Fundamentals of Perception & Sensation	3
PSYCH 570	Psychobiology	3
PSYCH 605	Foundations of Social Behavior	3
	or	
PSYCH 620	Psychology of Personality	3
	Psychology electives (chosen with advisor consultation)	12

The general education option

For students interested mainly in a liberal education, the above core program will be sufficient. In consultation with the advisor, they may wish to choose several other psychology courses beyond the 31 hour requirement. Additional courses in the arts, sciences, or humanities should be chosen in line with the student's prevailing interests. For example, students interested in industrial relations should take relevant courses in economics, business administration, and sociology. There is great latitude for the student in this option. Beyond the 31 required hours, additional course work is entirely a discretionary matter.

Students interested in teaching or guidance-counseling work in the schools should prepare for teacher certification with a major in psychology. Such students must consult with advisors in the College of Education.

Graduate option

Pursuing an advanced degree in psychology requires, in addition to a strong grade point average and solid aptitude scores, a broad and basic education in psychology. Chances for successful application to graduate school will be enhanced through demonstration of a rigorous grounding in psychology.

Therefore, undergraduates who anticipate pursuing a Ph.D. in psychology should take the following courses (the core of 31 hours is contained within the following recommendations):

STAT 330	Elementary Statistics for the Social Sciences	3
MATH 501	Introduction to Mathematics in the Social Sciences	3
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 201	FORTRAN Language Laboratory	2
PSYCH 110	General Psychology	3
PSYCH 250	Experimental Methods in Psychology	4
PSYCH 460	Information Processing & Memory	3
PSYCH 475	Principles of Learning & Motivation	3
PSYCH 480	Fundamentals of Perception & Sensation	3
PSYCH 505	Abnormal Psychology	3
PSYCH 570	Psychobiology	3
PSYCH 605	Foundations of Social Behavior	3
PSYCH 620	Psychology of Personality	3
PSYCH 775	History of Current Trends	3

Depending upon their more specialized goals, students may wish also to take PSYCH 585, 616, 575, or others. Students oriented toward physiological psychology will want to ensure they also have appropriate background in biology, chemistry,

and other areas. These matters should be worked out in consultation with an advisor. It is also strongly recommended that students gain research experience by working on projects under faculty supervision.

The psychological technician option

A growing field for those with B.A. or B.S. degrees in psychology is that of the psychological technician. Such a person usually works in an applied setting and carries out duties that are supportive of the Ph.D. psychologist.

Technicians are playing an increasing role in both clinical-institutional and industrial settings. The academic requirements and, in particular, the field experience requirements will provide a background in human relations that a variety of employers in business, industry, and government, should find attractive.

Since the psychological technician option is geared toward specific employment the recommended courses are larger in number and there is more structure in this option.

The core of 31 hours is required for both the clinical and industrial emphasis. In addition, for the clinical emphasis the following courses are required:

PSYCH 440	Psychology of Individual Differences	3
PSYCH 505	Abnormal Psychology	3
PSYCH 585	Basic Concepts in Clinical Psychology	3
PSYCH 586	Laboratory in Clinical Concepts	2
PSYCH 587	Field Placement	1-6

For the industrial emphasis the following additional courses are required:

PSYCH 440	Psychology of Individual Differences	3
PSYCH 559	Psychological Testing	3
PSYCH 560	Industrial Psychology	3
PSYCH 561	Laboratory in Industrial Psychology I	2
PSYCH 562	Laboratory in Industrial Psychology II	2
PSYCH 587	Field Placement	1-6

Other recommended courses for both the clinical and industrial emphasis will depend on student interests and will be worked out in consultation with a psychological technician advisor. An integral part of both emphases is supervised field experience in an applied setting. Arrangements for such experience will be worked out individually with each student as regards the exact number of hours for PSYCH 587, Field Placement, and the location (hospital, agency, research laboratory, other).

Graduate study

Professional training in psychology is obtained in graduate programs of study leading to the M.S. and Ph.D. degrees.

At KSU, doctoral programs are offered in several broad areas. These are: animal learning-physiological psychology (with concentration in animal learning and behavior or physiological psychology); information processing (with concentration in human learning and memory, psycholinguistics, human judgment, or perception-sensation); social-personality (with concentration in social psychology, personality, or developmental psychology); industrial-organizational psychology.

At the master's level, students may specialize in most of the traditional areas of psychology. Although primary emphasis is placed on work leading to the doctoral degree, a structured, terminal degree is offered in industrial-organizational psychology. Students who complete the doctoral program are eligible for a variety of positions, including teaching and research positions in colleges and universities, governmental agencies, and industry.

For most students, the master's program requires two years beyond the bachelor's level, and the doctorate, two more years. Prerequisites to admission into the graduate program are a superior academic record and background work essentially equivalent to the undergraduate psychology degree at KSU, especially courses in experimental psychology and statistics. In some cases, deficiencies in preparation may be made up after admission to the program.

A detailed description of the graduate programs, as well as information about financial support, may be obtained by writing to the director of graduate studies in the department.

Courses in psychology

PSYCH 015. Orientation to Psychology. (0) I. To acquaint psychology majors with psychology as a profession, and with the various options available to them at various levels of training. Discussion of professional, research, and educational methods and objectives in psychology. Should be taken during sophomore year or first semester of junior year. PSYCH-015-0-2099

Undergraduate credit

PSYCH 110. General Psychology. (3) I, II, S. An introduction to the study of behavior, with emphasis on human behavior. A survey of the methods, data, and principles of psychology. PSYCH-110-0-2001

PSYCH 115. General Psychology (Honors). (4) I, II. An introduction to the study of behavior. Pr.: Participation in Honors Program. PSYCH-115-0-2001

PSYCH 202. Drugs and Behavior. (2). Effects of drugs on human performance, cognition, and physiological processes will be discussed and the empirical evidence surveyed and critically evaluated in relation to both use and abuse of drugs in society. Pr.: PSYCH 110. PSYCH-202-0-2001

PSYCH 250. Experimental Methods in Psychology. (4). Laboratory investigation of learning, motivation, social-personality processes, and perception and sensation. Includes two hours rec. and four hours lab a week. Pr.: PSYCH 110. PSYCH-250-1-2002

PSYCH 280. Psychology of Childhood and Adolescence. (3). Survey of behavioral development from birth through adolescence. Pr.: Sophomore standing; PSYCH 110. PSYCH-280-0-1009

PSYCH 399. Honors Seminar in Psychology. (3) II. Selected topics. Open to non-majors in the Honors Program. PSYCH-399-0-4900

PSYCH 400. Personalized Instruction in General Psychology. (1-3) I, II. Supervised experience in presentation of psychological concepts in various classes. May be taken only with approval of the instructor of a general psychology class under whose supervision the student will obtain this experience. Pr.: PSYCH 110. PSYCH-400-2-2001

PSYCH 425. Problem Solving and Decision Making. (3) II. Provides both the psychological background and practical aids to help solve problems in everyday decision making. Skills to be covered include creativity, methods of problem solving, memory aids, decision-making tools, avoiding biases of judgment, etc. Pr.: PSYCH 110. PSYCH-425-0-2099

PSYCH 440. Psychology of Individual Differences. (3) II. Introduction to principles and methods of psychological testing; discussion of problems and findings in the study of individual and group differences in behavior; role or biological and social factors. Pr.: PSYCH 110. PSYCH-440-0-2006

PSYCH 450. Applications of Memory. (3) II. Examination of the applications of memory in such diverse areas as courtroom testimony, expert performance, mnemonic procedures, and advertising. Relevant theories and research in each area are examined. Pr.: PSYCH 110. PSYCH-450-0-2002

PSYCH 460. Information Processing and Memory. (3). A survey of the manner in which people extract and utilize relevant information from their environment as a basis for behavior. Topics may include memory storage and retrieval, attention, imagery, mnemonic devices, decision making, and other cognitive processes. Pr.: PSYCH 250. PSYCH-460-0-2002

PSYCH 475. Principles of Learning and Motivation. (3). Introduction to the study of learning and motivation in both animals and humans. Pr.: PSYCH 250. PSYCH-475-0-2002

PSYCH 480. Fundamentals of Perception and Sensation. (3) I. Empirical and theoretical approaches to phenomena of sensation and perception. Pr.: PSYCH 250. PSYCH-480-0-2002

PSYCH 490. Honors Tutorial in Psychology. (1-3) I, II. Individual directed research and study of a topic in psychology, normally as a preliminary to writing a Senior Honors Thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the Honors Program of the College of Arts and Sciences, and permission of instructor. PSYCH-490-3-2000

PSYCH 499. Senior Honors Thesis. (2) I, II, S. Open only to seniors in the Arts and Sciences Honors Program. PSYCH-499-4-2000

Undergraduate and graduate credit in minor field

PSYCH 505. Abnormal Psychology. (3). An introductory study of behavior pathologies, with emphasis on their etiology and treatment. Pr.: Junior standing; PSYCH 110. PSYCH-505-0-2099

PSYCH 510. Introduction to Behavior Modification. (3) II. Study of the principles of behavior modification and applications to human behavior. Emphasis on the learning principles and research in behavior modification. Pr.: PSYCH 505. PSYCH-510-0-2003

PSYCH 515. Children's Play and Make-Believe. Intersession. Theories and research concerning the role of play and make-believe in various aspects of the child's psychological development. Pr.: PSYCH 110. PSYCH-515-0-2009

PSYCH 520. Life-Span Personality Development. (3) I, II, S. Theories and research in the development of personality from infancy through old age. Origins of personality in heredity and early experience, socialization practices, life crises, and choices at various stages throughout life, and problems of aging. Pr.: PSYCH 110; sophomore standing. PSYCH-520-0-2009

PSYCH 530. Psychology of Mass Communications. (3) II. The psychological effects of mass communication on behavior and thought, including advertising, stereotyping of women and minorities, effects on children, violence and sex in the media, effects of news on behavior, and the promotion of prosocial behavior through the media. Pr.: PSYCH 110. PSYCH-530-0-2005

PSYCH 535. Social Psychology. (3). Psychology of the individual in society: social attitudes and behavior (e.g., voting, prejudice), their measurement, development and change in relation to individual personality and social influence. Pr.: PSYCH 110. PSYCH-535-0-2009

PSYCH 540. Psychology of Women. (3) II. Investigation of psychological processes of women. A developmental sequence with emphasis on major life events for women. Female physiology, early socialization into sex roles, friendship, achievement motivation, sexuality, marriage, childbearing, work, and mental health. Pr.: PSYCH 110. PSYCH-540-0-2099

PSYCH 545. Consumer Psychology. (3) I. Survey of psychological principles and facts in perception, learning, attitude formation, personality, etc. as they apply to behavior of consumers. Pr.: PSYCH 110 and junior standing. PSYCH-545-0-2008

PSYCH 550. Group Dynamics. (3) II. Behavior in small groups including interpersonal communication, development of norms, structure, and leadership. May be organized at times as a lab-discussion group and require some flexibility in schedule. Pr.: Six hours in psychology. PSYCH-550-0-2005

PSYCH 558. Varieties of Consciousness. (3) I. Traditional and contemporary approaches of both Western science and Eastern metaphysics to study of ordinary mind consciousness, unusual states of awareness, and efforts to expand the powers of mind. Topics include sleep, dreaming, biofeedback, meditation, psychoactive drugs, brain area dominance, and other factors influencing relationships. Pr.: PSYCH 110. PSYCH-558-0-2099

PSYCH 559. Psychological Testing. (3) II. Principles of psychological testing in industrial, clinical/counseling, and research environments. Topics include technical issues such as reliability, validity, norming, selection, placement, discrimination, etc. Also covers procedures for selecting, administering, and interpreting psychological tests. Pr.: PSYCH 110. PSYCH-559-0-2006

PSYCH 560. Industrial Psychology. (3) I. Survey of human behavior and psychological principles in an industrial/organizational context. Topics include: personnel selection, performance appraisal, work motivation, job satisfaction, training, leadership, and social behavior within organizations. Pr.: PSYCH 110. PSYCH-560-0-2008

PSYCH 561. Laboratory in Industrial Psychology I. (2) I. Supervised experience in personnel psychology including classifications, analysis, and evaluation of jobs. Pr.: PSYCH 560 or conc. enrollment. PSYCH-561-1-2008

PSYCH 562. Laboratory in Industrial Psychology II. (2) II. Additional supervised experience in personnel psychology including interviewing, EEOC regulations, training, and performance appraisal. Pr.: PSYCH 561. PSYCH-562-1-2008

PSYCH 563. Psychology of Women at Work. (3) I. Psychological experiences of women in the world of work, with emphasis on traditional and nontraditional sex role behavior, sexual discrimination and harassment, and relevant socialization experiences. Pr.: PSYCH 110. PSYCH-563-0-2008

PSYCH 565. Psychology of Aesthetics. (3). An approach to aesthetics which deals with the contributions of psychology to the study of aesthetic judgment and the formation of values. Pr.: Sophomore standing, PSYCH 110. PSYCH-565-0-2001

PSYCH 570. Psychobiology. (3). Human and animal behavior from viewpoints of psychology, physiology, and zoology. Includes neurophysiology, control of behavior by simple "brains," homeostasis in mammals, and the regulation of behavior by internal and external events. Pr.: BIOL 198, PSYCH 110. PSYCH-570-0-2010

PSYCH 575. Environmental Psychology. (3) I. Introduction to the study of one's behavior in relation to physical setting. Definitions of person-environment system, behavior settings, methods of environmental research, and assessment of behavior in residential, school, hospital, office, and leisure environments; decision making, planning, and design. Pr.: PSYCH 110 and six additional hours of psychology. PSYCH-575-0-2008

PSYCH 580. Psychology of Sexual Behavior. (3) I, II. Study of psychological determinants and consequences of human sexual behavior; roles of personality, attitudinal and emotional factors will be emphasized. Pr.: PSYCH 110, sophomore standing. PSYCH-580-0-2005

PSYCH 585. Basic Concepts in Clinical Psychology. (3) I. Critical analysis of the profession. Review of theoretical and empirical bases of such areas as intelligence and its measurement, personality and diagnosis, psychotherapy, and other modes of behavioral change. Pr.: PSYCH 110, 505, and three additional hours of psychology. PSYCH-585-0-2003

PSYCH 586. Laboratory in Clinical Concepts. (2) I. May be taken only in conjunction with PSYCH 585. Supervised practice in, demonstration of, and orientation to selected psychological techniques and practices. Pr.: Conc. enrollment in PSYCH 585. PSYCH-586-1-2003

PSYCH 587. Field Placement. (1-6) I, II, S. Supervised field experience in an agency or institutional setting in the application of psychological techniques to individuals, groups, or organizations. Regular supervision emphasizes relationship between theory and application and the evaluation of outcomes. Pr.: PSYCH 585 and 586, or 560 and 561 and consent of Psych. Tech. training committee. PSYCH-587-2-2003

PSYCH 595. Personality-Social Seminar. (2-3). Intensive discussion of selected topics. May be repeated. Pr.: Either PSYCH 605 or 620. PSYCH-595-0-2003

PSYCH 599. Problems in Psychology. (Var.) I, II, S. Investigation of selected problems. Pr.: PSYCH 110 and consent of instructor. PSYCH-599-3-2001

Undergraduate and graduate credit

PSYCH 605. Foundations of Social Behavior. (3) II. Selected empirical and theoretical approaches to such areas as attitudes, social influence, and the social bases of human behavior. Pr.: PSYCH 535 and either PSYCH 460, 475, or 480. PSYCH-605-0-2005

PSYCH 616. Comparative Psychology. (3). Behavior at different phylogenetic levels as an aid to the clarification of behavioral principles. Pr.: Consent of instructor. PSYCH-616-0-2010

PSYCH 620. Psychology of Personality. (3). Discussion of different approaches to the study of personality. Pr.: Any of the following: either PSYCH 460, 475, or 480. PSYCH-620-0-2099

PSYCH 625. Engineering Psychology. (3). The role of behavioral factors in the design and operation of machines and equipment. Pr.: PSYCH 110, STAT 330 or 707. PSYCH-625-0-2008

PSYCH 650. Psychology of Language. (3). Experimental study of language, including sentence comprehension and memory, language acquisition and development, speech perception, and effects of context, perception, reasoning, and linguistic structure on processing of language. Pr.: PSYCH 110 and junior standing. PSYCH-650-0-2002

PSYCH 710. Methods and Theory in Psychohistory. (3). Reviews the origins of psychohistory in works by Freud and Neo-Freudians such as Erikson and Lifton. Major focus is on the emerging methods and theories as they are being elaborated in such problem areas as psychobiography, history of childhood, and larger group process studies. Primarily for graduate students in psychology and history and for selected advanced undergraduates. Pr.: Consent of instructor. PSYCH-710-0-2005

PSYCH 715. Psychology of Aging. (3) II. The psychological aspects of human aging. An analysis of the contributions of experimental, developmental, and personality-social psychology to the study of aging. The psychopathology of aging and psychological intervention strategies are also covered. Pr.: PSYCH 110 or DAS 315 and junior standing. PSYCH-715-0-2009

PSYCH 775. History of Current Trends. (3). A review of the contributions of individuals and intellectual movements to the development of modern psychology. A survey of theoretical systems currently of influence. Pr.: PSYCH 110 and nine additional hours of psychology; senior standing. PSYCH-775-0-2001

PSYCH 790. Topics in Psychology. (Var.) I, II, S. Pr.: PSYCH 110 and consent of instructor. PSYCH-790-3-2001

PSYCH 799. Problems in Psychology. (Var.) I, II, S. Pr.: PSYCH 110 and consent of instructor. PSYCH-799-3-2001

Graduate credit

PSYCH 801. Logic and Methods of Psychology. (3). Methods of psychological research including general scientific and theoretical problems. Emphasis on methods of empirical investigation in such representative areas as learning, motivation, perception, and personality-social. Pr.: PSYCH 250 or equiv. PSYCH-801-0-2002

PSYCH 802. Quantitative Methods in Psychology. (3). Examination of the nature of statistical inference in psychological research: hypothesis testing and statistical estimation, including a survey of non-parametric methods; consideration of correlational techniques useful with different kinds of psychological data. Pr.: STAT 330 or equiv. PSYCH-802-0-2007

PSYCH 803. Introduction to Physiological Psychology. (3). A survey of basic concepts and experiments in the study of physiological correlates of behavior, including sensory and motor processes, learning, motivation, and emotion. Pr.: BIOL 198 and PSYCH 110. PSYCH-803-0-2010

PSYCH 805. Experimental Design in Psychology. (3). Introduction to techniques of research planning and experimental design, including critical evaluation of selected experiments. Pr.: PSYCH 802. PSYCH-805-0-2007

PSYCH 806. Psychological Measurement. (3). The logic and methodology underlying the construction of psychological measuring instruments from the psychophysical estimate of threshold to the scaling of complex psychological variables. Pr.: PSYCH 110 and STAT 330. PSYCH-806-0-2006

PSYCH 810. Motivation and Learning. (3). Experimental study of learning and motivation, with emphasis on recent developments in the field. Pr.: PSYCH 250 or equiv. PSYCH-810-0-2002

PSYCH 812. Perception. (3). Various systematic approaches to perception, with emphasis on experimental and quantitative data. The role of perception in affectivity, motivation, and personality theory is stressed. Pr.: PSYCH 250 or equiv. PSYCH-812-0-2002

PSYCH 814. Human Learning and Retention. (3). Analysis of processes involved in human learning, transfer and retention, with emphasis on current developments in the field. Pr.: PSYCH 250 or equiv. PSYCH-814-0-2002

PSYCH 820. Personality Theory and Research. (3). A comparative examination of contemporary theories of personality as well as research findngs relevant to such theories. Pr.: PSYCH 620 or equiv. PSYCH-820-0-2099

PSYCH 825. Judgmental Processes. (3). Examination of empirical findings and theoretical approaches to decision making and judgment with emphasis on higher cognitive processes. Pr.: PSYCH 250 and 802. PSYCH-825-0-2002

PSYCH 830. Pro-Seminar in Social Psychology. (3). Discussion of empirical findings and theoretical approaches to selected problem areas, such as attitude change, personality and social structure, person perception, small group processes. Pr.: PSYCH 535. PSYCH-830-0-2005

PSYCH 860. Practicum in Counseling Psychology. (Var.). Supervised practical experience in counseling. Pr.: Consent of instructor. PSYCH-860-2-2004

PSYCH 875. Industrial Psychology: Personnel Training. (3) I. An examination of the training of personnel in an organization. Relevant topics include: determination of an organization's training needs, selection and motivation of trainees, design and evaluation of training programs, and examination of several specific strategies for accomplishing the training function. Pr.: PSYCH 560 or equiv. PSYCH-875-0-2008

PSYCH 876. Industrial Psychology: Work Motivation. (3) I. An examination of empirical findings and theoretical approaches to understanding the relationship between worker motivation and job outcomes. Pr.: PSYCH 560 or GENBA 520. PSYCH-876-0-2008

PSYCH 877. Industrial Psychology: Leadership. (3) I. Examination of current leadership theories, research, and practice in the work setting, focusing on situational approaches to leadership, leadership styles, and interactions between personal characteristics and organizational factors. Pr.: PSYCH 560 or equiv. PSYCH-877-0-2008

PSYCH 878. Industrial Psychology: Selection and Appraisal. (3) II. Examination of theoretical and practical issues in staffing industrial organizations, including recruitment, test validation and other EEOC issues (test fairness, adverse impact, etc.), and placement strategies. Includes sources of data, rating scale format comparisons, and psychometric criteria for evaluating performance appraisal systems. Pr.: PSYCH 560 or equiv. PSYCH-878-0-2008

PSYCH 879. Organizational Psychology. (3) II. An examination of the individual's role in industrial organizations and the effects of organizational variables on the individual worker. Topics include organizational communication, employee socialization, psychological climates of organizations, psychological stress in organizations, group processes and employee performance, and organizational change. Pr.: PSYCH 560. PSYCH-879-0-2008

PSYCH 899. Research in Psychology (M.S.). (Var.). Pr.: Consent of supervisory committee. PSYCH-899-4-2001

PSYCH 921. Experimental Study of Personality. (3). Analysis and discussion of experimental results in personality research, particularly as they relate to theories of personality. Empirical work in such areas as anxiety, defense mechanisms, perception, needs, and development will be covered. Pr.: PSYCH 820. PSYCH-921-0-2099

PSYCH 922. Psychopathology. (3). A systematic review of behavior disorders, their etiology and treatment. Pr.: PSYCH 505 and 620. PSYCH-922-0-2099

PSYCH 925. Psychological Development of Children. (3). Analysis of theoretical and empirical approaches to the study of psychological child development. Includes representative approaches such as cognitive-developmental, S-R, and psychoanalytic. Pr.: PSYCH 280 or equiv. PSYCH-925-0-2009

PSYCH 931. Advanced Social Psychology. (3). Intensive examination of the social determinants of behavior, with emphasis upon problems of current professional interest. May be repeated. Pr.: PSYCH 830. PSYCH-931-0-2005

PSYCH 951. Seminar in Physiological Psychology. (1-3). Selected topics in physiological psychology. May be repeated with consent of supervisory committee. Pr.: Consent of instructor. PSYCH-951-0-2010

PSYCH 952. Seminar in Sensory Processes. (1-3). Selected topics in sensory psychology. May be repeated with consent of supervisory committee. Pr.: Consent of instructor. PSYCH-952-0-2002

PSYCH 953. Seminar in Personality. (1-3). Intensive discussion of current problems of theoretical and empirical interest in the field of personality. May be repeated with consent of supervisory committee. Pr.: Consent of instructor. PSYCH-953-0-2099

PSYCH 954. Seminar in Experimental Psychology. (Var.). Intensive discussion of a problem of current interest based on the class's study of the pertinent original literature. May be repeated with consent of supervisory committee. Pr.: PSYCH 810 or consent of instructor. PSYCH-954-0-2002

PSYCH 956. Seminar in Psychological Measurement. (Var.). Intensive discussion of a problem of current interest, based on the class's study of the pertinent original literature. May be repeated with consent of supervisory committee. Pr.: Consent of instructor. PSYCH-956-0-2006

PSYCH 957. Seminar in Cognitive Processes. (1-3). Selected topics in the study of human thinking and cognition. May be repeated with consent of supervisory committee. Pr.: Consent of instructor. PSYCH-957-0-2002

PSYCH 958. Seminar in Mathematical Models of Behavior. (1-3). Selected topics in mathematical psychology, and applications of mathematical models to behavior. May be repeated with consent of supervisory committee. Pr.: MATH 501 and consent of instructor. PSYCH-958-2-2001

PSYCH 959. Seminar in Social Psychology. (1-3). Emphasis on discussion of advanced topics of current interest in social psychology. May be repeated with consent of supervisory committee. Pr.: Consent of instructor. PSYCH-959-0-2005

PSYCH 960. Seminar in Industrial Psychology. (3) I. Intensive examination of current empirical and theoretical issues in industrial and organizational psychology. May be repeated with consent of supervisory committee. Pr.: PSYCH 560 or equiv. PSYCH-960-0-2008

PSYCH 968. Seminar in Professional Problems. (1-3). Intensive study and discussion of current professional problems in psychology. May be repeated with consent of supervisory committee. Pr.: Consent of instructor. PSYCH-968-0-2001

PSYCH 990. Internship in Psychology. (Var.). Pr.: Consent of the supervisory committee. PSYCH-990-2-2001

PSYCH 999. Research in Psychology (Ph.D). (Var.). Pr.: Consent of supervisory committee. PSYCH-999-4-2001

Sociology, Anthropology and Social Work

Marvin A. Kaiser,* head of department

Professors Finnegan, C. Flora,* Friedmann,* O'Brien,* Peters,* Rohrer,* and Schnur;* Associate Professors Adamchak,* Benson,* Dushkin,* J. Flora,* Kaiser,* Orbach,* H. Ottenheimer,* M. Ottenheimer,* Roncek,* and Taylor;* Assistant Professors Brede,* Camp,* Gibbons, Harris,* Miley,* and Ward; Adjunct Professors Hesser and Michie.

The Department of Sociology, Anthropology, and Social Work offers four separate undergraduate majors: general sociology; sociology/correctional administration; anthropology; and social work. The student may enroll in a B.S. or B.A. program in any of these major areas. Graduate-level work is offered in sociology only. M.A. programs are offered in general sociology and in the sociology/correctional administration option. The department also offers a Ph.D. program in sociology with a specialization in the areas of community and rural organization, social change and development, and gerontology. Descriptions of the specific undergraduate majors and graduate programs are given below.

Sociology

Sociology is the study of society and of social relationships. Some of the principal areas considered are social and community organization, the development and interaction of individuals in society, major social institutions, social problems and deviant behavior, population growth and distribution, and social change and development.

Sociology is a desirable background, as either a sole or a combined major, for further professional training in law, city planning, public administration, hospital administration, medicine, as well as for advanced graduate work in sociology or other of the social sciences.

Undergraduate study

Students who desire to major in sociology should refer to the general requirements for the B.A. or B.S. degree earlier in the College of Arts and Sciences section. There is a choice of two options in the undergraduate sociology program: the sociology/general option; or the sociology/correctional administration option. The student interested in sociology who desires to teach in secondary schools should prepare for teacher certification with a major in sociology (see College of Education section).

Students enrolled in general sociology will be required to take 28 semester hours of sociology to include SOCIO 211, 511, and 520. In addition to the other requirements eighteen hours of electives in sociology are to be taken at the 500 level or above.

The student completing the correctional administration option in sociology will take 43 hours of work in sociology plus 12 hours of tool and related courses as follows:

Sociology core (10 hours):

SOCIO 211	Introduction to Sociology	3
SOCIO 511	Comparative Social Theories	3
SOCIO 520	Methods of Social Research I	4

Sociology electives (6 hours at 500 or above)

Correctional administration core (12 hours):

SOCIO 560	Juvenile Delinquency	
SOCIO 561	Criminology	3
SOCIO 562	Introduction to Corrections	3
SOCIO 663	Sociology of Confinement	3
	or	
SOCIO 664	Alternatives to Correctional Confinement	3

Correctional field experience and professional seminar (15 hours) and:

SOCIO 568	Corrections Field Experience	12
SOCIO 569	Corrections Administration Professional Seminar	3

Tool and related courses (12 hours):

STAT 330	Elementary Statistics for the Social Sciences	3
SOCWK 560	Skills & Techniques in the Practice of Social Work 1	3
PSYCH 110	General Psychology	3
POLSC 110	Introduction to Political Science	3

This curriculum is designed to prepare the student for a variety of correctional positions concerned with integrating and reintegrating law violators into society.

Graduate study

The graduate programs in sociology provide the student with the opportunity to develop skills and interests in specific areas of focus while obtaining a solid grounding in basic substantive

areas of sociology. They offer a high level of student-faculty interaction and the opportunity to participate in supervised research.

The general master's program offers a full range of sociological specialties and a broad sociological background. It is primarily intended to prepare students who want to continue into Ph.D. programs. However, it may also be designed for students who want to teach in community colleges or work in areas of applied research.

The M.A. in sociology with a correctional administration option offers a balanced program of basic and applied sociological studies for those preparing for professional careers in correctional administration.

The Ph.D. program offers specialized training in community and rural organization, societal change and development, gerontology, sociological theory, and research methods. Additional training is provided in demography and human ecology, deviant behavior, social psychology, and social organization.

Sociology students may draw upon related graduate programs in computer science, statistics, and various social and behavioral sciences in designing individual programs of study. Special University programs in the economics of development, regional and community studies, and South Asia studies may be relevant for specific objectives. An IBM 370 and a computing center with a full range of facilities and services are available to graduate students. Research facilities in the Department of Sociology, Anthropology, and Social Work include a population research laboratory, a community studies laboratory, and a statistical laboratory.

For the majors in social work and anthropology, see descriptions later in this department section.

Courses in sociology
Undergraduate credit

SOCIO 211. Introduction to Sociology. (3) I, II, S. Development, structure, and functioning of human groups; social and cultural patterns; and the principal social processes. SOCIO-211-0-2208

SOCIO 214. Introduction to Sociology. H (4) I, II. Development, structure, and functioning of human groups; societal and cultural patterns; the nature of sociological inquiry. Lecture, discussion, and independent study. SOCIO-214-0-2208

SOCIO 301. Topics in Sociology. (3). Supervised independent and/or interdisciplinary study projects. Pr.: SOCIO 211 and consent of instructor. SOCIO-301-0-2208

SOCIO 399. Honors Seminar in Sociology. (1-3) I. On sufficient demand. Readings and discussion of selected topics. Open to non-majors in the Honors Program. SOCIO-399-3-4900

SOCIO 411. Social Problems. (3) I, II. Problems of personal and social disorganization, such as adolescence, juvenile delinquency, crime, mental illness, unemployment, and family instability; methods of prevention and treatment. Pr.: SOCIO 211. SOCIO-411-0-2208

SOCIO 499. Senior Honors Thesis. (2) On sufficient demand. Open only to seniors in the Arts and Sciences Honors Program. SOCIO-499-4-2208

Undergraduate and graduate credit in minor field

SOCIO 501. Proficiency Development. (1-3). Integrative review of sociological concepts and skills under faculty supervision. For single students or groups of students. Not applicable to major field requirements. Not repeatable. For undergraduate credit only. Pr.: Consent of instructor and superior performance in relevant course. SOCIO-501-0-2208

SOCIO 505. Introduction to the Civilizations of South Asia I. (3) I. Interdisciplinary survey of the development of civilizations in South Asia; geographical and demographic context; philosophical and social concepts; social and political institutions, literature and historical movements. (Same as HIST 505, ECON 505, POLSC 505, ANTH 505.) Pr.: SOCIO 211. SOCIO-505-0-2208

SOCIO 506. Introduction to the Civilizations of South Asia II. (3). Interdisciplinary survey of recent and contemporary civilizations in India, Pakistan, Ceylon, Nepal, and Afghanistan, including literature, geography, social and political structure, ideas. (Same as HIST 506, ECON 506, POLSC 506, ANTH 506.) Pr.: SOCIO 211. SOCIO-506-0-2208

SOCIO 510. Social Welfare as a Social Institution. (3). The development and present status of social welfare in meeting changing human needs and the requirements in other parts of our social system; the analysis of present-day philosophy and functions of social welfare. (Same as SOCWK 510.) Pr.: SOCIO 211. SOCIO-510-0-2208

SOCIO 511. Comparative Social Theories. (3). Investigations of a range of current sociological theories concerning the socialization process, group behavior, and social organization. Pr.: SOCIO 211. SOCIO-511-0-2208

SOCIO 520. Methods of Social Research I. (4). Treatment of the logic and procedures involved in the formulation of a research problem and the difficulties encountered in conducting research. Examines problems of explanation and prediction, the process of inquiry, elements of the scientific method, the design of research and analysis in the social sciences. Pr.: SOCIO 211, STAT 330 or equiv. To include one credit hour of lab and field research experience. SOCIO-520-1-2208

SOCIO 530. Population and Human Ecology. (3). Theories, policies, growth, composition, spatial aspects, movements, and world population trends. Pr.: SOCIO 211. SOCIO-530-0-2208

SOCIO 531. Urban Sociology. (3). Growth, development, and structure of the city as determined by geographical, ecological, and social factors; relation of rural and urban communities; problems of the city and various approaches to their solution. Pr.: SOCIO 211. SOCIO-531-0-2208

SOCIO 532. Community Organization and Leadership. (3). American community organization; special emphasis on community problems and planning. Pr.: SOCIO 211. SOCIO-532-0-2208

SOCIO 533. Sociology of Agricultural Organization in the U.S. (3) I. In even years. Social impact of agricultural change in U.S.; emphasis on land tenure, farmers; social movements, role of agricultural technology, and relationship of agriculture to rest of society. Pr.: SOCIO 211. SOCIO-533-0-2208

SOCIO 540. Social Organization. (3). Principles and processes of the organization and structure of human societies. Analysis of social groups and institutions and theories of social structure. Pr.: SOCIO 211. SOCIO-540-0-2208

SOCIO 541. Wealth, Power, and Privilege. (3) II. Distribution of resources and rewards in American society. Various explanations of the causes, persistence, and effects of inequality in American life. Discussion of social mobility and current issues. Pr.: SOCIO 211. SOCIO-541-0-2208

SOCIO 542. The Social Organization of the Future. (3). Examination of alternative social arrangements presented in speculative and science fiction. Consideration of fictional extrapolations of social, scientific, and technological trends in terms of specific institutions. Analysis of possible social and interpersonal structures imaginatively conceived. Pr.: SOCIO 211. SOCIO-542-0-2208

SOCIO 545. The Sociology of Women. (3). The position of women in the United States and cross-culturally is studied empirically and in theoretical perspective; analysis of social structural inputs to female status; examination of socialization and sex roles. Pr.: SOCIO 211. SOCIO-545-0-2208

SOCIO 550. Group Processes and Social Behavior. (3) I, II. Analysis of processes of group formation, maintenance and change and their interrelationships with individual social behavior. Consideration of major theoretical approaches and their empirical foundations. Pr.: SOCIO 211. SOCIO-550-0-2208

SOCIO 560. Juvenile Delinquency. (3). Nature, extent, and causes of delinquency; characteristics of delinquents; means of prevention and treatment. Pr.: SOCIO 211. SOCIO-560-0-2209

SOCIO 561. Criminology. (3) I, II. Nature, extent, and causes of crime; programs for prevention and treatment. Pr.: SOCIO 211. SOCIO-561-0-2209

SOCIO 562. Introduction to Corrections. (3) I. Introduction to the sociology of prisons, probations and parole, including corrections theory, the development of corrections practice and contemporary alternatives to imprisonment. Pr.: SOCIO 211. SOCIO-562-0-2105

SOCIO 565. Program and Policy Formulation and Analysis. (3). Examination of policies and programs developed to cope with various social problems. Emphasis will be placed on analysis of existing programs and policies and the formulation of alternative policies. Attention will be given to policy change through legislative action. (Same as SOCWK 565.) Pr.: SOCIO 260, 510. SOCIO-565-0-2104

SOCIO 568. Corrections Field Experience. (12) I, II. Supervised field experience in corrections institutions and community corrections programs. To be taken concurrently with SOCIO 569. Pr.: SOCWK 560. Corrections majors only. SOCIO-568-2-2105

SOCIO 569. Corrections Administration Professional Seminar. (3) I, II. Integrates field experience in the context of deviant behavior theory and correctional practice. To be taken concurrently with SOCIO 568. Pr.: SOCWK 560. Corrections majors only. SOCIO-569-0-2105

SOCIO 570. Race and Ethnic Relations in the U.S.A. (3). Racial and cultural groups; attitudes, prejudices, conflicts; approaches to understanding race and minority group relations in the U.S.A. Pr.: SOCIO 211. SOCIO-570-0-2208

Undergraduate and graduate credit

SOCIO 618. Religion in Culture. (3) II. The nature of religion and its manifestations in different cultural systems. (Same as ANTH 618.) Pr.: ANTH 200 or SOCIO 211. SOCIO-618-0-2208

SOCIO 640. Sociology of the Family. (3) I. Origin and development of marriage customs and systems of family organizations; the preparation for family life under present conditions. Pr.: SOCIO 211. SOCIO-640-0-2208

SOCIO 643. Sociology of Religion. (3) I. The role of religion as an institution in American society. An assessment of the functions of religion and an exploration of contemporary trends and movements, including information on traditional denominations and emerging sects and cults. Pr.: SOCIO 211. SOCIO-643-0-2208

SOCIO 645. Sociology of Sport. (3) II. A critical analysis of sport and leisure activity in contemporary American society focusing on such issues as sport participation and social mobility, race and sports, women and sports, and audience involvement. Pr.: SOCIO 211 or consent of instructor. (Cross-listed as PE 745.) SOCIO-645-0-2208

SOCIO 663. Sociology of Confinement. (3) I. Correctional confinement facilities for offenders of all ages, including management of offenders for the purpose of classification, training, and treatment, and for the purpose of security, custody, and discipline. Pr.: SOCIO 562. SOCIO-663-0-2105

SOCIO 664. Alternatives to Correctional Confinement. (3) II. Alternatives to prison such as fines, restitution, nonresidential treatment centers, community correction centers, probation, residential treatment, halfway houses, correctional field service, parole, furloughs, and work release. Pr.: SOCIO 562 or equiv. SOCIO-664-0-2105

Undergraduate and graduate credit

SOCIO 701. Problems in Sociology. (Var.) I, II, S. Pr.: SOCIO 211 and junior standing. SOCIO-701-3-2208

SOCIO 702. Political Sociology. (3) II. In even years. An introduction to the principles of political sociology. Theories of politics and society. Processes of political socialization, participation within and outside established organizational channels, recruitment of elites, communication and influence, power, decision-making, and policy outputs. Data are presented from a cross-national perspective. (Same as POLSC 702.) Pr.: SOCIO 211, POLSC 110. SOCIO-702-0-2208

SOCIO 709. Development of Social Thought. (3) On sufficient demand. Development of social thought from ancient civilization to the middle of the nineteenth century; approaches to the study of society; ideas on human origins and human nature, character and results of associative life, social trends, and social betterment. Pr.: SOCIO 211. SOCIO-709-0-2208

SOCIO 710. Systematic Analysis of Social Theory. (3) II. Examination of contemporary sociological theory with reference to the nature of scientific explanation and the function of scientific theory. Critical study and analysis of selected social theorists and types of social theory with the objective of clarifying the conceptual and logical structure of underlying theoretical models and their assumptions about man and society. Pr.: SOCIO 511 or equiv. SOCIO-710-0-2208

SOCIO 722. Specialized Techniques of Social Research. (3). Intensive examination of the problems and techniques of design, data collection, analysis and interpretation which accompany a particular strategy of basic or applied research. Topics announced for the semester in which the course is offered. May be repeated with consent of department. Pr.: SOCIO 211 or equiv. SOCIO-722-0-2208

SOCIO 724. Qualitative Methodology. (3) II. Collection, analysis, and presentation of sociological data using such methods as participant-observation, ethnomethodology, community analysis, documentary research and historiography, case study and life history. Emphasis upon formulation of problems and the execution of research. Pr.: SOCIO 520 and STAT 330 or equiv. SOCIO-724-2-2208

SOCIO 725. Intermediate Quantitative Methods. (3) I. Current sociological research techniques and applications, logic and strategy of sociological analysis, conceptualization and construction of research instruments, and the presentation and analysis of data. Pr.: SOCIO 520 and STAT 330. SOCIO-725-1-2208

SOCIO 730. Demography. (3) I. The study of human population, entailing the social and cultural determinations and consequences of changes in fertility, mortality, and migration. Pr.: SOCIO 211. SOCIO-730-1-2208

SOCIO 732. Community Change. (3) II. A variable content course which in any given semester will deal with one of the following topics: community power structure; applied community change; sociology of communes, utopias, and intentional communities; or rural community structure. May be repeated twice. Pr.: SOCIO 532 or equiv. SOCIO-732-0-2208

SOCIO 733. Gender, Power and International Development. (3) II. In odd years. Examination of various models of development and their impact on roles of women and men in various cultures. Emphasis upon Africa, Asia and Latin America. Comparisons of public, service and economic sectors, including agriculture, marketing and industry. Examination of policy issues. Pr.: SOCIO 211 or ANTH 200 and three additional hours in sociology or cultural anthropology. (Same as ANTH 733). SOCIO-733-0-2208

SOCIO 734. Sociology of Agricultural Development. (3) I. In odd years. Comparative rural systems in developing countries; emphasis on land tenure, peasant movements, relationship of agriculture to rest of society, and influence of developed countries on the agriculture of developing countries. Pr.: SOCIO 211. SOCIO-734-0-2208

SOCIO 735. Human Ecology. (3) II. In even years. The interrelationships among population, technology, environment, and social organization. An examination of the origins and development of human ecology in sociology, and recent attempts to redefine the area. Special emphasis on current theoretical and research efforts. Pr.: SOCIO 211 and consent of instructor. SOCIO-735-0-2208

SOCIO 736. Applied Agricultural and Rural Change in Developing Countries. (3) I. In even years. Examination of agricultural and rural development projects and programs and how they fit into national and regional social structures and cultural systems. Emphasis on locally and regionally based development strategies. Examination of the role of international agencies and changing domestic social conditions in understanding shifts in dominant approaches to applied rural change. Pr.: SOCIO 211 or ANTH 200. (Same as ANTH 736.) SOCIO-736-0-2208

SOCIO 740. Comparative Social Systems. (3) I. In even years. Compares social systems in different regions of the world. Examines models of comparative and historical sociology. Provides students with a background for conducting and evaluating comparative research. Treats such issues as socioeconomic development, group relations, and age and sex roles from a cross-cultural perspective. Pr.: SOCIO 211 or ANTH 200 and a 500-level course in Social or Cultural Change and Development. SOCIO-740-0-2208

SOCIO 741. Social Differentiation and Stratification. (3) I. In odd years. Analysis of societal organization based on age, sex, residence, occupation, community, class, caste, and race. Pr.: SOCIO 211. SOCIO-741-0-2208

SOCIO 742. Society and Change in South Asia. (3) II. In even years. Examines recent studies of family and community, population, mobility, urbanization and modernization in the India-Pakistan region, with focus on social change. Pr.: SOCIO 211 or ANTH 200 and either a 500-level course in South Asian Studies or one in Social Change and Development. SOCIO-742-0-2208

SOCIO 744. Social Gerontology: An Introduction to the Sociology of Aging. (3) I. Analysis of the phenomenon of human aging in its individual, social, and cultural aspects with special attention to the problems of aging populations in Western societies. Pr.: SOCIO 211. SOCIO-744-0-2208

SOCIO 746. The Sociology of Formal Organizations. (3) II. In even years. The nature and types of formal and complex organizations; the connections between them and of their societies; and selected aspects of their internal structure, such as peer group and hierarchial relations in organizations, processes of communication, management, and impersonal mechanisms of control. Studies a variety of formal organizations with particular emphasis upon industrial, educational, and governmental organizations. Pr.: SOCIO 211. SOCIO-746-0-2208

SOCIO 747. Sociology of Work. (3) II. The social nature of work and related phenomena; occupational structures; career lines; adjustment and interpersonal relations at work; significance of work in the life cycle. Pr.: SOCIO 211. SOCIO-747-0-2208

SOCIO 750. Social Control. (3) II. In odd years. Analysis of social and institution processes and mechanisms of social control: socialization, role allocation, systems of social sanctioning, growth and dynamics of institutional systems of social control emphasizing its character at the institutional and societal level of analysis. Pr.: SOCIO 211. SOCIO-750-0-2208

SOCIO 751. Social Change. (3) I. In even years. Social and cultural evaluation, including diffusion and parallel development; the lag hypothesis; influential factors in, and consequences of, social change; the process of social change, contemporary theories, including directed social change. Pr.: SOCIO 211. SOCIO-751-0-2208

SOCIO 752. Social Roles and Social Relationships. (3) II. In odd years. Analysis of the processes of interpersonal perception, attraction and social interaction in the formation, maintenance, and change of social relationships and social roles. Particular emphasis is placed on the importance of such processes for the formation of social groups and social interaction in a variety of social contexts. Consideration of major theoretical approaches and their empirical foundations. Pr.: SOCIO 211 and 550. SOCIO-752-0-2208

SOCIO 753. Sociology of Mass Communications. (3) II. In odd years. Social organization and change as influenced by the control, structure, and function of mass communications. Pr.: SOCIO 211. SOCIO-753-0-2208

SOCIO 767. Social Reactions to Deviance. (3) II. Selected topics in the sociology of deviance, such as (1) public reactions to deviant persons and groups, (2) the nature and extent of formally organized responses to deviance, and (3) deviance considered from the perspective of deviant actors. Pr.: SOCIO 411 and consent of instructor. SOCIO-767-0-2208

SOCIO 768. Critical Issues in Corrections. (3) II. Selected issues in corrections, including appropriate use of institutional personnel, inmate rights, determinate vs. indeterminate sentencing, modification of probation-parole systems, and evaluation of corrections programs. Pr.: SOCIO 562. SOCIO-768-0-2105

SOCIO 770. Sociology of Dominant-Minority Relations. (3) I. In odd years. Advanced sociological views of race or ethnic relations in industrialized societies; comparative, evolving, and contemporary perspectives on dominant-minority relations. Pr.: SOCIO 211 and consent of instructor. SOCIO-770-0-2209

Graduate credit

SOCIO 808. Advanced Issues in Sport Sociology. (3). On sufficient demand. An indepth analysis of the sociology of sport literature with special interest in critiquing the theoretical frameworks and methodologies employed. Pr.: PE 745 or SOCIO 745. SOCIO-808-0-2208

SOCIO 898. Master's Report Research. (Var.) I, II, S. SOCIO-898-4-2208

SOCIO 899. Master's Thesis Research. (Var.) I, II, S. SOCIO-899-4-2208

SOCIO 911. Seminar in Sociological Theory. (3) I. In odd years. Contemporary sociological theory as systems of explanation of social phenomena and as bases for empirical research. Particular attention given to problems of conceptualization, system building, and verification. Pr.: SOCIO 511 and 710 or equiv. SOCIO-911-0-2208

SOCIO 912. Seminar: Theory Construction in Sociology. (3) II. In odd years. An examination of alternative logical strategies in theory construction with emphasis on theory construction as a research tool. Pr.: SOCIO 511 and consent of instructor. SOCIO-912-0-2208

SOCIO 920. Seminar in Sociological Research. (3) II. In even years. Application of scientific techniques in the design and execution of research. Pr.: SOCIO 724 or 725. SOCIO-920-0-2208

SOCIO 930. Seminar in Community Analysis. (3) II. In odd years. Various aspects of the structural and functional analyses of communities: demographic, ecological, organizational, institutional. Pr.: SOCIO 530 or equiv. SOCIO-930-0-2208

SOCIO 931. Seminar in Demographic Methods. (3) II. In odd years. Demographic processes such as fertility, mortality, and migration, with emphasis on measurements, methods, and analytical techniques. Includes the construction of life tables and population estimates and projections. Pr.: SOCIO 725 and 730. SOCIO-931-0-2208

SOCIO 932. Seminar in Rural Sociology. (3) I. In even years. A sociological survey of research and empirical data on rural life and modes of management or control of agricultural organization for world geographic regions or individual nations. Pr.: SOCIO 733 or 734 or equiv. SOCIO-932-0-2208

SOCIO 940. Seminar in Social Organization. (3) II. In even years. Consideration of selected approaches to the study of societal organization, organizational theory and analysis. Pr.: Consent of instructor. SOCIO-940-0-2208

SOCIO 943. Research in Family Organization. (3) On sufficient demand. Selected research topics in the analysis of contemporary family structures; the relations of the family to other societal systems; comparative perspectives and the use of cross-national data in family research. Pr.: Consent of instructor. SOCIO-943-0-2208

SOCIO 944. Seminar in the Sociology of Aging. (3) I. In even years. Consideration of selected topics and issues in the sociology of aging such as retirement and institutional change, societal reactions to aging, population structure and socioeconomic consequences of aging populations, the social organization of leisure, the impact on social organization of services for older people, the structural and organizational consequences of widowhood, age-grading, and stratification in aging populations, analysis of the impact on community structure and organization of special institutions for older people. Pr.: SOCIO 744. SOCIO-944-0-2208

SOCIO 950. Seminar in Small Groups and Interaction. (3) I. In odd years. Longitudinal and cross-sectional analyses of the basic elements in social interaction. Pr.: SOCIO 550, 752, or equiv. SOCIO-950-0-2208

SOCIO 951. Seminar in Societal and Institutional Dynamics. (3) II. In even years. Analyses of change of societies and institutions; consideration of rates, degree, and direction of change, and of means employed to plan change in modern or emerging nations. Pr.: SOCIO 751 or equiv. SOCIO-951-0-2208

SOCIO 962. Seminar in Deviant Behavior and Social Disorganization. (3) I. In odd years. Analysis in detail and depth of selected forms of deviant behavior and their relevance to social disorganization. Pr.: Consent of instructor. SOCIO-962-0-2208

SOCIO 999. Ph.D. Dissertation Research. (Var.). SOCIO-999-4-2208

Anthropology

There are four major subfields of anthropology. Physical anthropology explores the origins of human life and the biological bases of culture. Archaeology examines the development of human cultures from prehistory and ancient civilizations to historic and modern times. Linguistic anthropology focuses on the languages and dialects of the world and the relationships of language to thought and culture. Cultural anthropology studies human behavior by surveying the range and variety of cultural traditions throughout the world. Some anthropology majors generalize, while others specialize in one or more of the subfields.

In addition to the general B.A. or B.S. requirements, anthropology majors take a minimum of 27 hours in anthropology as follows:

Introductions to the four subfields

ANTH 200	Introduction to Cultural Anthropology	3
ANTH 220	Introduction to Linguistic Anthropology	3
ANTH 260	Introduction to Archaeology	3
ANTH 280	Introduction to Physical Anthropology	3

Four advanced electives distributed among at least two of the subfields: 12 hours at or above the 500 level.

ANTH 602	Anthropological Theory	3

Many anthropology students prepare for the variety of occupations concerned with human relations by combining anthropological study with other training, frequently by majoring in two fields. Each program of study is worked out on an individual basis by a student and his or her advisor. Interested students may obtain additional information from the "Handbook on Majoring in Anthropology," which is available in the department office.

Courses in anthropology
Undergraduate credit

ANTH 200. Introduction to Cultural Anthropology. (3) I, II S. Introduction to basic anthropological concepts; technological, social, and religious characteristics of nonliterate cultures. ANTH-200-0-2202

ANTH 201. Introduction to Cultural Anthropology. H (4) On sufficient demand. Introduction to basic anthropological concepts; technological, social, and religious characteristics of nonliterate cultures; discussion and independent study. ANTH-201-0-2202

ANTH 202. Anthropology Seminar for Education Majors. (1) I, II. To aid elementary and secondary education majors in relating anthropological perspectives and findings to their teaching areas. Pr.: ANTH 200 or conc. enrollment. ANTH-202-0-2202

ANTH 220. Introduction to Lingulstic Anthropology. (3) I, II. Language as a part of human behavior: its origins, uses and abuses, and ways of defining reality. Basic descriptive and ethnosemantic skills used by anthropologists to learn languages in the field. ANTH-220-0-2202

ANTH 260. Introduction to Archaeology. (3) I, II. History of archaeological research; survey of concepts and methods of the field and laboratory; brief outlines of the major Old and New World cultural sequences. ANTH-260-0-2202

ANTH 280. Introduction to Physical Anthropology. (3) I, II. History of research; principles of evolution and human genetics; man's primate relations; fossil evidence of the evolution of man; the study of modern race; culture and evolution. ANTH-280-0-2202

ANTH 281. Introduction to Physical Anthropology Laboratory. (1) I, II. Laboratory investigation of human skeletal anatomy, human genetics, primate comparative anatomy, fossil hominid morphology and comparative evolution of hominid types. Two hours lab a week. Pr.: ANTH 280 or conc. enrollment. ANTH-281-1-2202

ANTH 399. Honors Seminar in Anthropology. (1-3). On sufficient demand. Readings and discussion of selected topics. Open to non-majors in the Honors Program. ANTH-399-3-4900

ANTH 499. Senior Honors Thesis. (2) On sufficient demand. Open only to seniors in the Arts and Sciences honors program. ANTH-499-4-2202

Undergraduate and graduate credit in minor field

ANTH 501. Proficiency Development. (1-3) I, II. Integrative review of anthropological concepts and skills under faculty supervision. For single students or groups of students. Not applicable to major field requirements. Not repeatable. For undergraduate credit only. Pr.: Consent of instructor and superior performance in relevant course. ANTH-501-0-2202

ANTH 505. Introduction to the Civilizations of South Asia I. (3) I. Interdisciplinary survey of the development of civilizations in South Asia; geographical and demographic context; philosophical and social concepts; social and political institutions; literature and historical movements. Pr.: ANTH 200. (Same as HIST 505, GEOG 505, POLSC 505, SOCIO 505.) ANTH-505-0-2202

ANTH 506. Introduction to the Civilizations of South Asia II. (3) II. Interdisciplinary survey of recent and contemporary civilizations in India, Pakistan, Ceylon, Nepal, and Afghanistan, including recent history, current economy, religion, culture, languages, literature, geography, social and political structure, ideas. Pr.: ANTH 200. (Same as HIST 506, ECON 506, POLSC 506, SOCIO 506.) ANTH-506-0-2202

ANTH 507. Folk Cultures. (3) I or II. A comparative approach to agrarian societies; the investigation of economic, political, social, and ideological aspects of peasantry. Pr.: Sophomore standing. ANTH-507-0-2202

ANTH 508. Male and Female: Cross Cultural Perspectives. (3) I or II. Sex-roles and male-female relationships, particularly in non-western cultures. Stresses sex-role complementarity within the anthropological framework of cultural relativism. Pr.: Sophomore standing. ANTH-508-0-2202

ANTH 510. Kinship and Marriage in Cross-cultural Perspective. (3) I or II. Systems of family, marriage, descent, and sex tabus in cross-cultural perspective. Pr.: ANTH 200 or SOCIO 211. ANTH-510-0-2202

ANTH 511. Cultural Ecology and Economy. (3) I or II. Cultural ecology and organization in non-Western cultures. Discussion of environment and culture, exchange and display, money, trade and markets, and economic development and social change in selected societies. Pr.: Sophomore standing. ANTH-511-0-2202

ANTH 512. Political Organization in Folk and Nonliterate Cultures. (3) I or II. Anthropological approaches to politics in non-Western societies. Structural-functional, evolutionary, and conflict theories. A comparison of the political systems of small-scale and complex societies: political modernization. Pr.: Sophomore standing. ANTH-512-0-2202

ANTH 515. Creativity and Culture. (3) I or II. How anthropologists view the expressive and creative aspects of culture. A cross-cultural survey of the verbal, visual, and performing arts. Pr.: Sophomore standing. ANTH-515-0-2202

ANTH 519. Practical Anthropology. (3) I or II. Application of anthropological principles and insights to programs of planned change, cultural innovation, and contemporary problems. Pr.: Sophomore standing. ANTH-519-0-2202

ANTH 520. Senior Seminar. (3). On sufficient demand. Intensive exploration of anthropological problems for both majors and non-majors of sufficient background. High levels of individual participation. Pr.: Senior standing and nine hours of anthropology, or consent of instructor. ANTH-520-0-2202

ANTH 522. Special Topics in Anthropology. (1-4). On sufficient demand. Variable topics within cultural anthropology, linguistic anthropology, archaeology, or physical anthropology. Pr.: Consent of instructor. ANTH-522-3-2202

ANTH 532. Mexican and Central American Indians. (3) I or II. Description and comparison of Tarahumara, Aztec, Maya, Cuna, and other civilizations and nonliterate cultures of Mexico, Central America, and the Caribbean ring. Culture contact and change in surviving tribes. Pr.: Junior standing. ANTH-532-0-2202

ANTH 533. Indians of Kansas. (3) I. In even years. Description and comparison of aboriginal and post-contact tribes of the prairies and plains of Kansas. Culture contact and change in surviving tribes. Pr.: Sophomore standing. ANTH-533-0-2202

ANTH 536. Black Cultures of the Americas. (3) I or II. Description and comparison of African-derived cultural patterns in the Americas, stressing culture contact and acculturation, retention and syncretism, social and economic organization, religion, language, the arts. Pr.: Sophomore standing. ANTH-536-0-2202

ANTH 545. Cultures of India and Pakistan. (3) I or II. Cultural survey of the contemporary tribes and Hindu caste communities in their historical and geographical context, followed by a more intense analysis of selected Indian and Pakistani village case studies stressing indigenous economic, social, political, and religious structures. Pr.: Sophomore standing. ANTH-545-0-2202

ANTH 550. Cultures of Africa. (3) I or II. Family life, subsistence patterns, exchange systems, languages, religions, and development of the peoples of Africa. Pr.: Junior standing. ANTH-550-0-2202

ANTH 555. Black Music of the Americas. (3) I or II. Black American music from its roots in Africa to the current styles, emphasizing the cultural contexts in which it developed into such styles as vodun, shango, arhoolies, work songs, shouts, spirituals, blues, jazz, soul and reggae. Pr.: Junior standing. (Same as MUSIC 555). ANTH-555-0-2202

ANTH 570. American Indian Archaeology. (3) I or II. Peopling of the New World; the Archaic period; spread of agriculture; prehistoric village community life. Specific cultural sequences of the U.S. and Arctic. Pr.: ANTH 200 or 260. ANTH-570-0-2202

Undergraduate and graduate credit

ANTH 600. Cultural Dynamics. (3) I or II. Cultural processes and their conditions and consequences; mechanisms by which customs originate and become culturally significant; development, modification, and decline of customs and cultures; processes and consequences of intercultural contact; applied anthropology. Pr.: ANTH 200 or consent of instructor. ANTH-600-0-2202

ANTH 602. Anthropological Theory. (3) I or II. Review and integration of the major theoretical approaches in the principal branches of anthropology, history, and contemporary methodology and theory. Pr.: ANTH 200 or consent of instructor. ANTH-602-0-2202

ANTH 604. Culture and Personality. (3) I or II. Anthropological contributions to personality study; cross-cultural comparisons of personality types, means of personality formation in nonliterate and folk cultures; cultural change and personality. Pr.: Three hours of anthropology or consent of instructor. ANTH-604-0-2202

ANTH 616. Music and Culture. (3) I or II. Music as an aspect of human behavior. Exploration of structural and functional relationships between music and other aspects of culture. Style area survey. Pr.: ANTH 200 or consent of instructor. ANTH-616-0-2202

ANTH 618. Religion in Culture. (3) I or II. The nature of religion in nonliterate and peasant societies, and its manifestations in different cultural systems. Pr.: ANTH 200 or SOCIO 211 or consent of instructor. (Same as SOCIO 618.) ANTH-618-0-2202

ANTH 625. Independent Reading and Research in Anthropology. (1-3) I, II. Guided reading and research on a specific anthropological topic of student interest, leading to preparation of a research paper. Topic and credit to be arranged. Pr.: Three hours of anthropology and consent of instructor. ANTH-625-3-2202

ANTH 630. Indians of North America. (3) I. In odd years. Aboriginal cultures of Canada and the United States; cultural contact and change among surviving groups. ANTH-630-0-2202

ANTH 634. Indian Cultures of South America. (3). On sufficient demand. A survey of the nature and variability of the aboriginal cultures of South America. Analysis of sample cultures, stressing economic, social, political, and religious structures. ANTH-634-0-2202

ANTH 666. Communication and Culture. (3) I or II. How language, gesture, and other modes of human communication reflect and are influenced by culture. Kinesics, proxemics, sociolinguistics, enthnolinguistics, structural, and symbolic anthropology. Pr.: ANTH 220. ANTH-666-0-2202

ANTH 673. Precolumbian Civilizations of Mexico and Guatemala. (3) I or II. Early man, the beginnings of agriculture; the rise of civilization; the classic empires of the Maya, Aztec, Tarascans, and their neighbors; relationships with the Southeastern and Southwestern United States. Pr.: ANTH 200 or 260, or consent of instructor. ANTH-673-0-2202

ANTH 676. Archaeology of the Old World. (3) I or II. Origin and evolution of human culture and technology; the major prehistoric sequences of Asia, Africa, and Europe; emphasis on period of plant and animal domestication and the European sequences. Pr.: ANTH 200, 260, or consent of instructor. ANTH-676-0-2202

ANTH 679. Archaeological Field Methods. (3) I. Archaeological site survey, site excavation, and laboratory analysis of sites and artifacts from the Manhattan, Kansas region. Field work on Saturday, 8:00-5:00, while weather permits, laboratory work thereafter. Pr.: Consent of instructor. ANTH-679-1-2202

ANTH 685. Race and Culture. (3) I. In odd years. The biological meaning of race; the interrelationships of biological and cultural traits in human evolution; processes of racial formation of man; methods of classifying human races; cultural inheritance; the distinction of race, culture, personality, and intelligence; a review of modern racism; race as an evolutionary episode. ANTH-685-0-2202

ANTH 688. Fossil Man and Human Evolution. (3) I or II. Human origins and evolution as indicated by fossil evidence; interpretation of man-apes, Pithecanthropus, Neanderthal, Cro-Magnon and other major fossil groups within the context of evolutionary theory, primate comparisons, and cultural evolution. Pr.: ANTH 200 or 280 or consent of instructor. ANTH-688-0-2202

ANTH 691. Primatology. (3) I. In even years. Survey of the Primate Order including considerations of evolution, morphology, and behavior. Particular emphasis will be given to developing perspectives about the origin and evolution of man in the context of the Primate Order. Pr.: ANTH 280 or consent of instructor. ANTH-691-0-2202

ANTH 694. Osteology. (3) II. Detailed study of human skeleton, with special attention to health and demographic conditions in prehistoric cultures and the evaluation of physical characteristics and genetic relationships of prehistoric populations. Pr.: ANTH 280 or consent of instructor. ANTH-694-0-2202

ANTH 695. Laboratory in Osteology. II. Laboratory demonstration and exercise in working with skeletal material for analysis of sex, age, stature, and race. Complete metric and non-metric analysis with consideration given to paleodemography, paleopathology, *in situ* analysis and excavation and preservation. Written reports on bone material remains will be necesssary. Pr.: ANTH 694 or conc. enrollment and consent of instructor. ANTH-695-1-2202

ANTH 730. Field and Laboratory Techniques in Archaeology. (8) S. Participation in archaeological excavations; techniques, methods, and procedures in a field research situation. The laboratory work of cleaning, cataloging, analyzing, and preliminary report preparation of materials recovered. Credit may be received twice for this course if the areas or problems involved are different. Pr.: ANTH 200 or 260 or consent of instructor. ANTH-730-1-2202

ANTH 733. Gender, Power and International Development. (3) II. In odd years. Examination of various models of development and their impact on roles of women and men in various cultures. Emphasis upon Africa, Asia and Latin America. Comparisons of public, service and economic sectors, including agriculture, marketing and industry. Examination of policy issues. Pr.: SOCIO 211 or ANTH 200 and three additional hours in sociology or cultural anthropology. (Same as SOCIO 733). ANTH-733-0-2202

ANTH 736. Applied Agricultural and Rural Change in Developing Countries. (3) I. In even years. Examination of agricultural and rural development projects and programs and how they fit into national and regional social structures and cultural systems. Emphasis on locally- and regionally-based development strategies. Examination of the role of international agencies and changing domestic social conditions in understanding shifts in dominant approaches to applied rural change. Pr.: SOCIO 211 or ANTH 200. (Same as SOCIO 736). ANTH-736-0-2202

ANTH 792. Field Methods in Linguistics. (3) On sufficient demand. An introduction to techniques of collecting and analyzing linguistic data in the field. Work with non-Western informants in class. Pr.: Consent of instructor. Same as SPCH 792 and MLANG 792. ANTH-792-0-2202

Social work

Social work is concerned with the interaction between people and their social environments. Social workers help people deal with other people, cope with the many social and environmental forces which affect and control daily life, and help solve problems which inhibit growth and development.

The undergraduate social work program is accredited by the Commission on Accreditation of the Council on Social Work Education through 1987. The social work undergraduate major is of particular value to those students who intend to pursue a professional career in the field of social welfare upon graduation. The bachelor's degree in social work is recognized as a beginning level professional degree. Students graduating from the social work program at Kansas State University are eligible for licensure as Bachelor Degree Social Workers in the state of Kansas. Furthermore, students who wish to pursue graduate studies in social welfare will be eligible for advanced standing in many Masters of Social Work programs throughout the United States.

The interventional tasks performed by social workers are derived from a common base of knowledge, values, and skills. Thus, social workers are uniquely qualified to provide resources, services, and opportunities to individuals, groups, families, and communities. Students are required to complete a field placement (during their senior year), providing students with an opportunity to integrate classroom material with on-the-job experience in a professional setting.

The student wishing to declare a major in social work may enroll directly in curriculum SOCWK. This is a provisional admission to the social work program. Formal evaluation occurs prior to SOCWK 560, Social Work Skills I, taken during the junior year. At that time the academic and class performance of each student is formally evaluated by the total social work faculty. To be fully accepted into the social work program the student must have an overall 2.5 grade point average. In addition, the student must have a 3.0 grade point average (B) in all major social work courses (SOCIO 411, 532, 520; SOCWK 260, 510, 560, 561, 562, 564, 565). Failure to meet these required standards will result in the student being dismissed

from the social work program. If the student's record over the previous two semesters shows improvement, the student may be placed on a one-semester probation. A final decision on acceptance or dismissal will be made at the end of the probation semester. Following acceptance into the program the student may proceed to sequential classes if the required grade point average is maintained. Appeals may be made through established departmental procedures.

A student completing a B.A. or B.S. in social work must complete 41 hours of major courses, plus 21 hours of tool and related courses. These courses are divided into several content areas:

Human development and social environment content (24 hours):

SOCIO 211	Introduction to Sociology	3
SOCIO 411	Social Problems	3
SOCIO 532	Community Organization & Leadership	3
SOCIO 540	Social Organization	3
PSYCH 110	General Psychology	3
PSYCH 520	Life-Span Personality Development	3
POLSC 110	Introduction to Political Science	3
ECON 110	Economics I	3

Social work practice content (7 hours):

SOCWK 560	Skills & Techniques in the Practice of Social Work 1	3
SOCWK 561	Skills & Techniques in the Practice of Social Work II	4

Research content (7 hours):

STAT 330	Elementary Statistics for the Social Sciences	3
SOCIO 520	Methods of Social Research 1	4

Social policy content (6 hours):

SOCWK 510	Social Welfare as a Social Institution	3
SOCWK 565	Program & Policy Formulation & Analysis	3

Field Placement (12 hours):

SOCWK 562	Field Experience	1-12

Professional social work seminar (3 hours):

SOCWK 564	Social Work Professional Seminar	3

Courses in social work

Undergraduate credit

SOCWK 260. Introduction to Social Work. (3). A survey of the field of social work, the relationship of social work to other social developments and vocational opportunities. SOCWK-260-0-2104

SOCWK 499. Senior Honors Thesis. (2) On sufficient demand. Open only to seniors in the Arts and Sciences Honors program. SOCWK-499-4-2204

Undergraduate and graduate credit in minor field

SOCWK 501. Proficiency Development. (1-3). Integrative review of social work concepts and skills under faculty supervision. For single students or groups of students. Not applicable to major field requirements. Not repeatable. For undergraduate credit only. Pr.: Consent of instructor and superior performance in relevant course. SOCWK-501-0-2104

SOCWK 510. Social Welfare as a Social Institution. (3). The development and present status of social welfare in meeting changing human needs and the requirements in other parts of our social system; the analysis of present-day philosophy and the functions of social welfare. (Same as SOCIO 510.) Pr.: SOCIO 211 or ECON 110 or POLSC 110. SOCWK-510-0-2104

SOCWK 560. Skills and Techniques in the Practice of Social Work I. (3). Fundamental skills and techniques for social workers, emphasizing the nature of social work, interviewing, communication skills, observation and information gathering skills. Pr.: SOCIO 411, 532, 540; PSYCH 520; POLSC 110; ECON 110. SOCWK-560-0-2104

SOCWK 561. Skills and Techniques in the Practice of Social Work II. (4). Social work practice course concentrating on assessment skills and planning decisions for intervention, strategies, and roles. Evaluation and termination of change efforts and selected social work skills such as collaboration, consultation, and supervision will be integral parts of course material. Pr.: SOCWK 560. (Social Work majors only.) SOCWK-561-0-2104

SOCWK 562. Field Experience. (1-12). Supervised field experience in community agencies and programs as a practical application of social work knowledge and skills gained from introductory courses. Emphasis on direct work with clients, whether individuals, groups, or communities. Bi-weekly seminar makes use of student's experience to analyze social work theory and practice. Pr.: SOCWK 260, SOCIO 510, SOCWK 560. (Social Work majors only.) SOCWK-562-2-2104

SOCWK 563. The Practice of Social Work in Rural Areas. (3) On sufficient demand. A review of characteristics and social problems of rural areas. The development of practice competency in social work roles and skills necessary for rural practice. Pr.: SOCWK 560. SOCWK-563-0-2104

SOCWK 564. Social Work Professional Seminar. (3). A review of various theories in the behavioral sciences which influence the practice of social work. Primary focus of the course is on the use of these theories in implementing change in various client systems. Pr.: To be taken conc. with Field Experience SOCWK 562. (Social Work majors only.) SOCWK-564-0-2104

SOCWK 565. Program and Policy Formulation and Analysis. (3). Examination of policies and programs developed to cope with various social problems. Emphasis will be placed on analysis of existing programs and policies and the formulation of alternative policies. Attention will be given to policy change through legislative action. Same as SOCIO 565. Pr.: SOCWK 260, 510. SOCWK-565-0-2104

SOCWK 566. Social Work in Aging Services. (3) II. Social work practice course focusing attention on working with institutionalized and non-institutionalized elderly. Role of the social worker is explored in the context of physical, psychological, social, and economic aspects (of aging). Skills in working with elderly are emphasized thru classroom and direct practice in social work or in gerontology. Pr.: Three course hours in social work or gerontology. SOCWK-566-0-2104

Undergraduate and graduate credit

SOCWK 610. Topics in Social Work. (1-3). Supervised independent study projects. Pr.: SOCWK 260 plus six hour behavioral science foundation course and consent of instructor. SOCWK-610-3-2104

Speech

Norma D. Bunton,* head of department

Professors Bunton,* Dace,* Fedder,* Flanagan,* and Nichols;* Associate Professors Aseneta, Climenhaga,* Hinrichs,* Rainbolt,* Schenck-Hamlin,* Shelton,* and Uthoff; Assistant Professors Anderson, Armagost,* Diehl, and Lau; Instructors Germeroth, MacFarland, Molineux, and Ross.

Undergraduate study

The Department of Speech offers study in the areas of rhetoric/communication, linguistics, theatre, and speech pathology-audiology.

The undergraduate major requires at least 21 hours in one of the four areas and nine hours in other areas within the department. See speech secondary education requirements, College of Education, for teacher certification.

Students intending to attempt to quiz out of SPCH 106, Oral Communication IA for credit should enroll in the line number in the current schedule of classes which is designated for speech "quiz out." To receive credit by quiz out, a student must receive an A, B, or C.

Graduate study

In the Department of Speech major work is offered leading to the degree master of arts in the following fields: rhetoric/communication, speech pathology-audiology, and theatre.

A student majoring in any of the above areas may select a minor field either outside the department or within the department. Only certain areas are approved for minor work within the department when the major is also within the department.

Prerequisite to major graduate work in these fields is the completion of the four-year undergraduate program substantially equivalent to that required of general arts and science students, the curriculum to include sufficient elementary work in the appropriate area of speech to prepare the student for the advanced field chosen.

The master of arts degree may be pursued by students in the department under one of the following plans: Plan A: a minimum of 30 semester hours of graduate credit including a master's thesis of six to eight semester hours. Plan B: a minimum of 30 semester hours of graduate credit including a written report of two semester hours either of research or of problem work on a topic in the major field. Plan C: a minimum of 30 semester hours of graduate credit in course work only, but including a project which discloses evidence of creative ability.

Students in theatre may, with graduate faculty approval, elect any one of plans A, B, or C.

Students in rhetoric/communication may, with graduate faculty approval, elect plan A or B. Students in speech pathology-audiology may, with graduate faculty approval, elect plan A or C.

Written and oral examinations will be required in all areas.

Rhetoric, communication, and film

From ancient times to the present day the study of rhetoric and communication has included both theoretical and practical applications. The discipline focuses on communication as a social process (theory); the development of methods for evaluation of communication in personal and societal settings (criticism); and the improvement of individual communication skills (performance).

Study in rhetoric and communications prepares graduates for professional careers in a variety of fields and in a world increasingly dependent on communication for its information and in its resolution of public issues.

SPCH 080. Speech Seminar. (0). Special topics and lectures for speech majors. Required of all majors each semester. SPCH-080-0-1506

Undergraduate credit

SPCH 060. Beginning Spoken English. (3). On sufficient demand. Designed for those with little or no knowledge of English. Emphasis on development of skills necessary for speaking and understanding conversational English, including language lab. SPCH-060-1-1506

SPCH 065. Spoken English for International Students. (3) I, II. Review of spoken American English, including language lab. SPCH-065-1-1506

SPCH 105. Oral Communication I. (2). Selection and outlining of speech material, with emphasis on content, organization, and oral presentation. SPCH-105-0-1506

SPCH 106. Oral Communication IA. (3). Alternate to SPCH 105 permitting greater emphasis on preparation and delivery of speech material. Credit not granted for both SPCH 105 and 106. SPCH-106-0-1506

Three hours of credit for Oral Comm. IA may be earned by "Quiz Out" with an A, B, or C. See description of "Quiz Out" in Speech under Undergraduate Study in Speech.

SPCH 107. Oral Communication IB. (3). Speaking, reading, and writing for international students whose linguistic ability in American English is below that of the native American student; emphasis on aural-oral approach to structural patterns of spoken English. Pr.: Satisfactory score on the Speech Proficiency Examination for International Students. SPCH-107-1-1506

SPCH 125. Argumentation and Debate. (3) II. Basic theories of argumentation, with emphasis on their application in academic debate. Pr.: SPCH 105 or 106. SPCH-125-0-1506

SPCH 127. Small Group Discussion Methods. (3) II. Basic concepts of small group decision making. Projects emphasize participation in and analysis of communication in the small group. SPCH-127-0-1506

SPCH 210. Forensics Participation. (1-2) I, II. Intercollegiate debate or individual events. Four hours maximum credit. Pr.: Consent of director of the activity. SPCH-210-2-1506

SPCH 235. Introduction to the Art of Film. (3). Examination of the means of creating film art. Attention to techniques employed by successful directors, writers, and producers. SPCH-235-0-1506

SPCH 320. Introduction to General Semantics. (3). Basic studies in general semantics, communication models and related materials; emphasis upon problems of reference, definition and meaning in a communicative context. SPCH-320-0-1506

SPCH 321. Public Speaking. (3). The principles of rhetoric applicable to speech composition and delivery. The preparation of speeches adapted to the professional requirements of students. As a term project each student investigates and speaks upon a significant public question of his own choosing. Pr.: SPCH 105 or SPCH 106. SPCH-321-0-1506

SPCH 322. Introduction to Human Communication. (3) I, II. Survey of basic theories of human communication with a focus on how human beings originate, transmit, receive, and respond to messages in face-to-face communication systems. SPCH-322-0-1506

SPCH 323. Nonverbal Communication. (3) I, II. Analysis of nonverbal communication in terms of time, space, form, and action. Pr.: SPCH 105 or SPCH 106. SPCH-323-0-1506

SPCH 327. Employment Interviewing. (3). Examination of principles of interviewing with emphasis on developing the communication skills essential for an effective job interview. SPCH-327-1-1506

SPCH 330. Introduction to Oral Rhetorical Study. (3) I. Survey of the basic theories of oral rhetoric from classical to modern times. Pr.: One course in oral communications. SPCH-330-0-1506

SPCH 398. Sophomore Honors Seminar. (3) II. Open only to qualified students in the Arts and Sciences Honors Program. SPCH-398-0-4900

SPCH 426. Coaching and Directing Speech Activities. (3) I. A review of current practices in coaching curricular and extra curricular speech activities with practical experience in the problems and procedures of directing a forensic program. Pr.: Six hours of general speech or theatre courses that are 200 level or above. SPCH-426-1506-E

SPCH 498. Honors Tutorial in Speech. (1-3) I, II. Individual directed research and study of a topic in Speech, normally as a preliminary to writing a Senior Honors Thesis. May be repeated once to a total of 3 hours. Pr.: Sophomore standing, membership in the Honors Program of the College of Arts and Sciences, and permission of the instructor. SPCH-498-0-1506

Undergraduate and graduate credit in minor field

SPCH 520. Analysis of Experimental Research Literature in Speech. (3). A study of the literature employing the experimental method in general speech, speech pathology and audiology, and theatre. Pr.: Six hours in speech. SPCH-520-0-1506

SPCH 525. Argumentation Theory. (3) I. Analysis of theories of argumentation as applied to advocacy in the courtroom, labor arbitration, deliverative bodies and competitive debate. Special attention is given to propositions, burden of proof, issues, evidence, reasoning, analysis, case construction, organization, and refutation. Pr.: SPCH 125. SPCH-525-0-1506

SPCH 526. Persuasion. (3) II. The study of communication as persuasion; examination of contemporary approaches to persuasion. SPCH-526-0-1506

SPCH 527. Group Discussion Methods. (3) I, II. Examination of research, techniques, and principles regarding the activities of face-to-face groups; emphasis upon achieving creative group endeavor through discussion. Pr.: SPCH 105 or SPCH 106 or SPCH 125 or SPCH 127. SPCH-527-0-1506

SPCH 528. Professional Interviewing. (3). Comprehensive study of the communication process involved in interview situations. Analysis of the interview as a management, research, and mass media tool as commonly used in organizations and professional environments. Emphasis on developing the strategies and skills for planning, conducting, and interpreting data from interviews. Pr.: SPCH 105 or 106. SPCH-528-1-1506

Undergraduate and graduate credit

SPCH 620. Perspectives on Communication. (3) I, II. Analysis of communication as persuasion, information transmission, symbolic interaction, and relational development. Theorists will include Aristotle, Burke, Shannon, and Weaver, and their contemporaries. Pr.: SPCH 322 and junior standing. SPCH-620-0-1506

SPCH 621. Language and Social Interaction. (3) II. The spoken word in the on-going process of communication. Topics will include analysis of symbolic expression; evaluation of speech style; and conversation. Pr.: SPCH 320 or LING 280; Junior standing. SPCH-621-0-1506

SPCH 721. Communication Research Methods. (3) I, II. In odd years. An introduction to methods and materials used in communication research including such techniques as content analysis, attitude scaling, stylistic analysis, and physiological measurement. Pr.: SPCH 520 or graduate standing. SPCH-721-0-1506

SPCH 725. History of American Public Address. (3). Study of American speakers, from the time of Jonathan Edwards to the present, including their training, speeches, and effectiveness. Pr.: Junior standing and consent of instructor. SPCH-725-0-1506

SPCH 726. Seminar in Persuasion. (3) II. In odd years. Survey and analysis of advanced theory and experimental studies in persuasion. Pr.: Junior standing. SPCH-726-0-1506

SPCH 730. Rhetorical Theory and Criticism. (3). Study of rhetorical theory and criticism from early Greek to modern times. SPCH-730-0-1506

SPCH 731. Medieval and Renaissance Rhetoric. (3). A study of the influential works of rhetoric from St. Augustine to Thomas Wilson. Pr.: SPCH 730. SPCH-731-0-1506

SPCH 732. Modern Rhetoric. (3). Readings in the rhetorical theories of Kenneth Burke and other twentieth century contributors. Pr.: SPCH 730. SPCH-732-0-1506

SPCH 735. History of the Art of the Film. (3). History, critical theory, and techniques of the film as an art form from its inception to the present. Pr.: SPCH 235. SPCH-735-0-1506

SPCH 736. Film Theory and Criticism. (3). Studies in film criticism based on the writings of Kracauer, Balasz, Eisenstein, Spottiswoode, and others. Pr.: SPCH 235. SPCH-736-0-1506

SPCH 737. Documentary Film. (3). Production methods, theory, in documentary film production. SPCH-737-0-1506

SPCH 799. Problems in Speech. (Var.). Open to students in any speech area. Pr.: Junior standing and consent of instructor. SPCH-799-3-1506

Graduate credit

SPCH 820. Seminar in Speech. (3). Selected topics in speech research. May be repeated for credit with change in topic. SPCH-820-3-1506

SPCH 899. Research in Speech. (Var.). Pr.: Sufficient training to carry on the line of research undertaken and consent of instructor. SPCH-899-4-1506

Linguistics

There is general agreement that nothing is more characteristically human than the ability to use language. Linguists, however, usually do not study languages in order to become proficient in speaking, reading, or writing them. In linguistics we are interested in discovering all the principles that, in a sense, define each language, how it works, how it has changed through time and geographical distribution, as well as how children learn to speak, and how people use language.

There are relationships between linguistics and many other disciplines (see Linguistics, in the general information for the College of Arts and Sciences). Students are encouraged to explore as many of these relationships as they can as undergraduates, especially if they anticipate going on to graduate study.

Undergraduate credit

LING 280. Introduction to the Study of Language. (3-4). Survey of the scientific study of language. Contributions of linguistics to an understanding of the nature of language. Presupposes no previous knowledge of linguistics. Three hours lec. and one optional additional hour rec. a week. LING-280-0-1505

Undergraduate and graduate credit

LING 681. General Phonetics. (3). Description of speech sounds and their classification according to place and manner of articulation. Exposure to the sounds of English and those of other languages. Students will acquire the ability to recognize, transcribe, and reproduce possible speech sounds. (Same as ENGL 681.) LING-681-1-1505

LING 682. Experimental Phonetics. (3). Introduction to experimental phonetics. Study of the physiologic, acoustic and perceptual characteristics of speech. Pr.: SPCH 350 and 351. LING-682-1-1505

LING 780. Introduction to Linguistics. (3). The basic concepts of modern linguistics, with exposure to English and other languages. Provides the student with sufficient background to pursue more advanced courses. Assumes no previous linguistics study, but aimed at more mature students. (Same as ENGL 780 and LG 780.) LING-780-0-1505

LING 783. Phonology I. (3). Basic concepts of the theory of language sound systems with particular reference to English but including reference to other languages as well. Pr.: SPCH or ENGL 681 and SPCH, ENGL, or MLANG 780. (Same as ENGL 783 and LG 783.) LING-783-0-1505

LING 785. Syntax I. (3). Basic concepts of syntactic theory, with particular reference to English but including reference to the grammatical systems of other languages as well. Pr.: ENGL 530 or SPCH, ENGL, or LG 780. (Same as ENGL 785 and LG 785.) LING-785-0-1505

LING 789. Topics in Linguistics. (3). Seminar on a special topic in linguistics chosen from a broad spectrum of possible interest areas including history of linguistics, theories of performance, and linguistics and society. Topic to be announced for the semester in which offered. Course may be repeated for credit on another topic. Pr.: SPCH, ENGL, or LG 780. (Same as ENGL 789.) LING-789-0-1505

LING 792. Field Methods in Linguistics. (3). On sufficient demand. An introduction to techniques of collecting and analyzing linguistic data in the field. Work with non-Western informants in class. Pr.: Consent of the instructor. (Same as SOCIO 792.) LING-792-0-1505

Speech pathology-audiology

The goal of the speech pathology-audiology program is to train professional personnel who are competent to help children and adults with communicative problems of speech, hearing, and language. The program at Kansas State University has been designed to meet the current requirements for certification of clinical competence of the American Speech-Language and Hearing Association and the state of Kansas Department of Education requirements for speech clinicians and school audiologists.

Evidence of meeting professional competency requires a minimum of 60 semester hours of academic credit. Twelve of these 60 semester hours must be obtained in courses which provide information that pertains to normal development and use of speech, language, and hearing. Thirty of these 60 semester hours must be in courses which provide: information relative to communication disorders; and information about the management of speech, language, and hearing disorders. At least 24 of these 30 semester hours must be in courses in the professional area (speech pathology or audiology) for which the certificate is requested and no less than 6 semester hours may be in audiology for the certificate in speech pathology or in speech pathology for the certificate in audiology. No more than 6 semester hours may be in courses which provide credit for clinical practice obtained during academic training.

Credit for study of information pertaining to related fields that augment the work of the clinical practitioner of speech pathology and/or audiology may also apply toward the total 60 semester hours.

Thirty of the total 60 semester hours which are required for a certificate must be in courses that are acceptable toward a graduate degree. Moreover, 21 of the 30 semester hours must be within the 24 semester hours required in the professional area (speech pathology or audiology) for which the certificate is requested or within the six semester hours required in the other area. Determination of the student's program of study and the completion of all requirements for certification are the responsibility of the student and the advisor.

In addition, the master's degree candidate must have completed a minimum of 300 clock hours of supervised direct clinical experience with a variety of disorders and age groups in the Kansas State University Speech and Hearing Center, the public schools, and other off-campus clinical training sites.

Courses in speech pathology-audiology
Undergraduate credit

SPPAT 140. Improving Vocal Communication Skills. (2). Understanding of the vocal mechanism and its relation to the production of speech; laboratory period for the study and practice of speaking skills. Intended for students who desire to improve deficiencies in their speaking ability. May be repeated for a maximum of four hours credit. SPPAT-140-1-1220

SPPAT 240. Elements of English Phonetics. (3). Analysis of sounds which make up English speech and consideration of how sounds vary phonetically and physiologically; acquire skill in the transcription of speech into the symbols of the International Phonetic Alphabet. SPPAT-240-0-1220

SPPAT 243. Introduction to Speech Pathology. (3). A survey of communication disorders, and an introduction to the fields of speech pathology and audiology which are responsible for the clinical management of these disorders. SPPAT-243-0-1220

SPPAT 250. Experimental Analysis of Vocal Behavior. (3). Study of behavior modification principles which are relevant to the experimental analysis of vocal behavior. The types of vocal behavior investigated extend from uncoded utterances to complex language responses. SPPAT-250-0-1220

SPPAT 340. Hearing Problems and Hearing Tests. (4) I. Survey of the etiology and classification of hearing disorders. Introduction to hearing tests and measurements. SPPAT-340-1-1220

SPPAT 342. Developmental Psycholinguistics. (3). Review of research and theory of early development of language comprehension and production, involving vocalization, phonology, morphology, syntax, semantics, and pragmatics. Discussion of the relationship between cognition and language as well as other variables influencing language acquistion. SPPAT-342-0-1220

SPPAT 345. Clinical Procedures in Speech Pathology and Audiology. (3). Orientation to clinical practicum. Opportunities for clinical observation of speech, language, and hearing evaluation and therapy. Study of diagnostic tools, therapy materials, equipment, and clinical procedure. Pr.: Sophomore and junior standing majors only. SPPAT-345-0-1220

SPPAT 350. Structure and Function of the Speech Mechanism. (3). Anatomy and physiology of normal and abnormal speech mechanisms, including respiration, phonation, resonance and articulation. SPPAT-350-0-1220

SPPAT 351. Fundamentals of Hearing. (3). Study of the ear and the mechanics of hearing. SPPAT-351-0-1220

SPPAT 400. Manual Communication. (3) I, II. Study of background information in current trends in the use of sign language. Restricted to sign language used in the United States. Includes instruction in the American Manual Alphabet and Vocabulary for about 700 signs. Primary focus will be application of beginning skills for communication with those who depend on this form of communication. SPPAT-400-0-1220

SPPAT 443. Language Assessment and Intervention. (3). The nature of language disorders as well as general principles of language assessment and intervention are prescnted. Specific language assessment and intervention methodology for individuals functioning in various stages of cognitive development are reviewed. Language disorders related to the mentally or physically handicapped, emotionally disturbed, and learning disabled are examined. Pr.: SPPAT 342. SPPAT-443-0-1220

SPPAT 446. Articulation/Phonology I. (3). Research, theories, and principles concerning normal acquisition, phonological processes, diagnosis, and management of articulation disorders. Pr.: SPPAT 240. SPPAT-446-0-1220

SPPAT 456. Principles of Professional Practice. (3). Procedures for establishing program services in varied employment settings (i.e, screening, assessmcnt, caseload selection, scheduling, service models, IEPs, record kecping, budget and fee schedules, and management protocols). Utilization of resource personnel and interprofessional rclationships are discussed. Pr.: Senior standing. SPPAT-456-0-1220

SPPAT 489. Undergraduate Topics in Speech-Language Pathology and Audiology. (1-3). Review of current topics in speech-language pathology and/or audiology. May be repeated for a maximum of six hours with a change in topic. Pr.: Consent of instructor. SPPAT-489-0-1220

Undergraduate and graduate credit in minor field

SPPAT 555. Language Development. (3). Survey of the development of speech and language skills in children. Pr.: FCDEV 310 or EDCI 300. SPPAT-555-0-1220

Undergraduate and graduate credit

SPPAT 600. Manual Communication II. (3). Instruction in an additional 400-500 signs in the SEE system. Introduction to elementary ASL techniques. Discussion of other augmentative communication systems. Research will be conducted into the use of various manual communication systems with special populations, including aphasic, language disabled, mentally handicapped, and others. Pr.: SPPAT 400 or basic sign language skills. SPPAT-600-0-1220

SPPAT 641. Fluency Disorders. (3). Research and theory concerning etiology characteristics, assessment, and treatment of individuals with disfluency problems. Pr.: SPPAT 250. SPPAT-641-0-1220

SPPAT 642. Laryngeal Disorders. (3). Research and theory concerning etiologies, assessment, and clinical measurement of laryngeal pathologies. Pr.: SPPAT 350. SPPAT-642-0-1220

SPPAT 644. Aural Rehabilitation I. (3). Study of and techniques for the habilitation of rehabilitation of speech and language problems of the hearing impaired. Pr.: SPPAT 340. SPPAT-644-0-1220

SPPAT 650. Laboratory in Speech Pathology. (1-3). Supervised practice in the use of the materials and methods of speech pathology. Pr.: SPPAT 345. SPPAT-650-3-1220

SPPAT 657. Practicum in Public School Speech and Hearing Services. (5-8). Observation and participation in the management of speech and hearing impaired children under the supervision of selected public school speech and hearing clinicians. Pr.: Admission to student teaching. SPPAT-657-2-1220

SPPAT 660. Laboratory in Audiology. (1-3). Supervised practice in the use of the equipment, materials, and methods of audiology. Pr.: SPPAT 340 and 351. SPPAT-660-2-1220

SPPAT 740. Hearing Conservation. (3) II or on sufficient demand. Effects of noise on hearing. Development, management, and control of community hearing conservation programs. Pr.: SPPAT 340. SPPAT-740-1-1220

SPPAT 745. Audiology I. (3) I. Fundamental topics in audiology. Included are monitoring of equipment calibration, pure tone measurements, masking and speech testing. Laboratory practice is required. Pr.: SPPAT 351. SPPAT-745-0-1220

SPPAT 747. Audiology I Laboratory. (1). Student must be concurrently enrolled in Audiology I. Two hours of lab a week. Pr.: SPPAT 351. SPPAT-747-0-1220

SPPAT 750. Orofacial Anomalies. (2). Research and theory concerning etiology, characteristics, assessment, and clinical management of individuals with orofacial anomalies. Cleft lip and/or palate is emphasized. Pr.: SPPAT 350. SPPAT-750-0-1220

SPPAT 755. Audiology II. (3) II. Study of differential diagnostic audiometric procedures in the classification of hearing loss. Topics include middle ear measurement procedures, site of lesion testing and procedures applicable to the pediatric population. Pr.: SPPAT 745. SPPAT-755-1220

SPPAT 768. Aural Rehabilitation II. (3). Principles and methods of maximizing receptive communication skills of the hearing impaired. Pr.: SPPAT 644. SPPAT-768-0-1220

Graduate credit

SPPAT 800. Research Methods in Speech-Language Pathology/Audiology. (3). Introduction to techniques of research planning and experimental design with emphasis on those used most frequently in speech-language pathology/audiology; critical evaluation of selected experiments; and development of technical writing skills. Pr.: Graduate standing. SPPAT-800-0-1220

SPPAT 810. Articulation/Phonology II. (3). Recent research in specific areas of phonology and articulation development, assessment, and management. Pr.: SPPAT 446. SPPAT-810-0-1220

SPPAT 830. Aphasia. (3). Research and theory concerning the nature, etiologies, evaluation, and treatment of aphasia. Pr.: SPPAT 350. SPPAT-830-0-1220

SPPAT 840. Neuropathologies of Speech and Language. (3). Research and theory concerning nature, etiologies, evaluation, and principles of neuropathologies. Pr.: SPPAT 350. SPPAT-840-0-1220

SPPAT 843. Amplification in Hearing Rehabilitation. (3) II. Analysis of electroacoustic characteristics of hearing aids. Earmold acoustics. Selection and use of amplification. Pr.: SPPAT 745 and consent of instructor. SPPAT-843-1-1220

SPPAT 845. Theoretical Foundations of Audiology. (3). Study of the auditory mechanism, with emphasis on critical evaluation of current methods employed in clinical audiology. Pr.: SPPAT 745. SPPAT-845-0-1220

SPPAT 846. Seminar in Stuttering. (3). Current research concerned with stuttering behavior, etiology, developmental aspects, evaluation and remediation. Pr.: SPPAT 641. SPPAT-846-0-1220

SPPAT 847. Practicum in Audiology and Speech Pathology. (3-6). Audiology: Supervised clinical procedures in screening and diagnostic hearing examinations as related to rehabilitative and medical orientations. Management procedures for the hard of hearing. Hearing aid selection. Speech Pathology: Supervised clinical methods in speech pathology; experience in diagnosis, organization, and administration of treatment programs. May be repeated for a maximum of fifteen credit hours. Pr.: Graduate standing in Audiology or Speech Pathology. SPPAT-847-2-1220

SPPAT 849. Topics in Speech-Language Pathology or Audiology. (1-3). Critical review of recent research related to measurement and modification of speech, hearing, or language deficits. May be repeated for a maximum of nine hours with change in topic. Pr.: Graduate standing. SPPAT-849-0-1220

SPPAT 855. Seminar in Language Assessment and Intervention. (3). Review of research and theory of current topics in language and cognition. Assessment and intervention methodology will be discussed. Pr.: SPPAT 443. SPPAT-855-0-1220

SPPAT 865. Seminar in Audiology. (3) I. Study of selected areas of audiology. May be repeated for a maximum of six credit hours with change in subject matter. Pr.: SPPAT 755 and SPPAT 843. SPPAT-865-0-1220

Theatre and interpretation

The undergraduate major in theatre emphasizes the education of students for professional career goals or for cultural enrichment as an avocation. The goal of the theatre program is to develop an awareness of the many areas of theatre and its discipline. Training is available in all areas of theatre including scenery, costuming, theatre history and literature, acting, directing, and playwriting. The three purposes of the program are to provide: a liberal arts program in theatre; a pre-professional preparation; and the basic theatre skills for the bachelor's candidate.

A major consists of 37 hours in theatre and nine hours in tool courses in other areas of the department. (The course used to satisfy the College of Arts and Sciences requirement of one course in oral communication may not be counted as part of these nine hours.) The 37 hours in theatre must be distributed as follows:

A theatre core of 21 hours:

THTRE 261	Fundamentals of Acting	3
THTRE 266	Fundamentals of Technical Production	3
THTRE 367	Stage Costuming	3
THTRE 370	Dramatic Structure	3
THTRE 565	Principles of Directing	3
THTRE 572	History of Theatre I	3
THTRE 573	History of Theatre II	3

Twelve additional hours in theatre courses numbered 500 or above (excluding THTRE 710).

Four hours of production work distributed as follows:
Two hours in THTRE 211, Drama Participation.
One hour in conjunction with Fundamentals of Technical Production.
One hour with Stage Costuming.
Two hours in THTRE 710, Practicum in Theatre.
There will be an oral evaluation of all production work required for the major at the end of each semester.

Course offerings are available leading to the degree of master of arts. Prerequisite to admission into the graduate program in theatre are a superior academic record and background work essentially equivalent to our undergraduate major. In some cases, students are admitted on a provisional basis so they may make up deficiencies in undergraduate preparation. Graduate students in theatre may elect any one of the plans A, B, or C, as described earlier in this department section. There are three fields of concentration within the theatre area: history, literature, and criticism of theatre; technical production, design, and lighting; and acting, directing, and playwriting. All graduate students are required to take nine hours of graduate credit in history, literature, and criticism courses. In addition, all graduate students must take a minimum of six hours of graduate credit in one of the other two fields and a minimum of three hours of graduate credit in the remaining field. An additional 12 hours of graduate credit is required of each student. A total program of study is decided upon through regular consultation with the student's graduate committee. Further information about opportunities for financial support, and copies of the preparatory reading list for the written and oral examinations may be obtained by writing the director of graduate studies in theatre in the department.

In neither the undergraduate nor the graduate program in theatre may the following courses be used to discharge group requirements (they may be used only to discharge elective requirements in the major): SPCH 210, 735, 736; THTRE 160, 165, 560, 563, 664, 710, 712, 763, 779.

Courses in theatre and interpretation
Undergraduate credit

THTRE 160. Introduction to Theatre. (3). Consideration of the basic elements of theatre: aesthetics, dramatic literature, theatre technology, and producing organizations. THTRE-160-0-1007

THTRE 161. Fundamentals of Improvisation. (3). Introduction to the techniques of improvisation with the emphasis upon practical participation. THTRE-161-0-1007

THTRE 165. Appreciation of Theatre. (2). Direct experience with live theatre through an investigation of theatrical materials, forms, and styles and attendance at the University theatrical productions. THTRE-165-0-1007

THTRE 211. Drama Participation. (1-2) I, II. Work in theatrical productions. Four hours maximum credit. Pr.: Consent of director of activity. THTRE-211-2-1007

THTRE 260. Stage Movement. (3). A study of the technique of stage movement and an investigation of the language of gesture. Students are encouraged to have had a minimum of one semester of ballet or modern dance before entering this course, or to take dance concurrently with stage movement. THTRE-260-1-1007

THTRE 261. Fundamentals of Acting. (3). Theory and practice of fundamental skills and techniques of acting. Major emphasis is on freeing and training the individual's imagination, intellect, body, and voice through designed exercise and performed scenes. May be repeated for a total of six hours credit with consent of instructor. THTRE-261-1-1007

THTRE 263. Oral Interpretation of Literature. (3). Techniques of reading from the printed page, selecting portions from various forms of literature, including narrative poetry, essay, lyric, sonnet, nonfictional prose, scenes from plays, and selected short stories. THTRE-263-0-1007

THTRE 266. Fundamentals of Technical Production. (3) I. Materials and techniques used in scenery construction and theatre lighting. Concurrent enrollment in at least one hour of THTRE 211 is required. THTRE-266-0-1007

THTRE 267. Fundamentals of Stage Costuming and Makeup. (3) I, II. Basic techniques of stage costume construction and theatrical makeup. THTRE-267-1-1007

THTRE 268. Techniques of Makeup. (3). Techniques of makeup for stage, movies, and television. THTRE-268-1-1007

THTRE 269. Fundamentals of Stage Lighting. (3). Basic theory of electricity, light and optics. Practical mechanics of stage lighting safety, instruments, and control systems. THTRE-269-0-1007

THTRE 275. Summer Theatre Workshop. (0-6) S. Supervised participation in a summer theatre repertory/stock program. Limited to freshmen and sophomores. May be repeated for a maximum of six hours credit. Pr.: Consent of instructor. THTRE-275-2-1007

THTRE 361. Intermediate Acting. (3). Emphasis upon expanding the actor's capabilities through more advanced scene work and character study. Pr.: THTRE 261 and consent of instructor. THTRE-361-0-1007

THTRE 366. Theatrical Drafting Techniques. (3) II. Fundamentals of drafting for theatrical ground plans, working drawings, and perspective drawings. THTRE-366-13-1007

THTRE 367. Stage Costuming. (3) II. A lec.-lab surveying the principles of costuming for the theatre, television, and film. Concurrent enrollment in at least one hour of THTRE 211 required. THTRE-367-0-1007

THTRE 370. Dramatic Structure. (3). Fundamentals of play analysis for directors with emphasis upon concepts of form, style, characterization, discovery, and reversal. Includes practice in analyzing plays of various forms and styles. THTRE-370-0-1007

THTRE 475. Opera Workshop. (1-6). Principles and techniques of operatic and musical theatre production, with emphasis on class rehearsal and performance of selected scenes from opera and musical drama; brief survey of the history of opera. Offered jointly by the departments of Speech and Music. (Same as MUSIC 475.) THTRE-475-0-0-1007

Undergraduate and graduate credit in minor field

THTRE 560. Advanced Stage Movement. (3). Study in the physical development of character and advanced techniques of stage movement. May be repeated for a total of nine hours credit by qualified students. Pr.: THTRE 260 and one semester of ballet or modern dance. THTRE-560-1-1007

THTRE 561. Vocal Expression for Actors. (3). Studies and application of vocal techniques for stage productions; emphasis on development of the actor's vocal mechanism. May be repeated for a total of nine hours credit by qualified students. Pr.: Consent of instructor. THTRE-561-1-1007

THTRE 562. Playwriting. (3). Theoretical study and practical application of techniques of playwriting with regard to plot, characters, and production; emphasis placed on the one-act form. May be repeated for a total of six hours credit. THTRE-562-0-1007

THTRE 563. Storytelling. (2). A consideration of literary materials appropriate for children in nursery schools, kindergarten, and elementary schools. Major emphasis is directed toward training in the art of storytelling. Pr.: SPCH 105 or 106. THTRE-563-0-1007

THTRE 565. Principles of Directing. (3). Principles and techniques of directing for the theatre; the historical emergence of the director; study of current theories. Pr.: THTRE 261. THTRE-565-1-1007

THTRE 566. Rehearsal Techniques. (0-3) I, II. A laboratory course for students enrolled in performance and production classes. May be repeated for 6 hours. Pr.: Conc. enrollment in THTRE 765 or 783 or 779. THTRE-566-2-1007

THTRE 570. The Lyric Theatre. (3). On sufficient demand. The history of operetta and musical comedy from Offenbach to the present (Same as MUSIC 570). Pr.: MUSIC 150 or THTRE 165 or equiv. THTRE-570-0-1007

THTRE 571. The Opera. (3). Survey of the history of opera with a review of the most important operas. (Same as MUSIC 571.) Pr.: MUSIC 150 or THTRE 165, or equiv. THTRE-571-0-1007

THTRE 572. History of Theatre I. (3) I. A survey of the development of the theatre from ancient times to 1700. Pr.: Junior standing and consent of instructor. THTRE-572-0-1007

THTRE 573. History of Theatre II. (3) II. A survey of the development of the theatre from 1700 to the present. Pr.: Junior standing or consent of instructor. THTRE-573-0-1007

Undergraduate and graduate credit

THTRE 660. Professional Theatre Tour. (2-3). Intersession, S. Supervised viewing and analysis of professional theatre productions. Included travel to one or more theatre centers such as New York, London, or Los Angeles. Students are charged an additional fee to cover travel expenses. Written critical reviews of the productions are required. May be repeated once by undergraduates. Pr.: Six hours of credit in theatre. THTRE-660-2-1007

THTRE 664. Creative Dramatics. (3). The development of creative imagination and personal well-being through theatre games, improvisation, role playing, and simulation. The use of drama in recreational and educational settings. Improvisation in performing scripted drama. Pr.: Junior standing. THTRE-664-1-1007

THTRE 665. Theatre for Special Populations. (3). Theory and practice of creative dramatics and theatre production for special populations; individualized reading and projects for particular populations such as the handicapped or the elderly. Pr.: Junior standing. THTRE-665-0-1007

THTRE 666. Stage Management. (3) I, II. Theory and practice of stage management in the professional and non-professional theatre. Emphasis is on the organization of all areas of theatre knowledge needed for the running of theatrical productions. Pr.: THTRE 266. THTRE-666-0-1007

THTRE 667. History of Costume for the Theatre. (3) I. A study of western dress from antiquity to the present as it pertains to theatrical costumes. Emphasis on practical aspects for historical reproduction of clothing. Pr.: Junior standing or consent of instructor. THTRE-667-0-1007

THTRE 670. Religion and Theatre. (3) II. Drama and stagecraft of theatre expressing the religious heritage of Judaism and Christianity; the role of theatre in religious education and worship. Pr.: Junior standing. THTRE-670-0-1007

THTRE 710. Practicum in Theatre. (0-6). Supervised participation in a position of major responsibility. May be repeated for a maximum of 12 hours credit. Pr.: THTRE 160, or THTRE 261 or THTRE 266; junior standing; consent of supervising faculty member and approval of faculty coordinator for THTRE 710. A contract filed with appropriate faculty members is required. THTRE-710-2-1007

THTRE 711. Topics in Technical Theatre. (3). Selected topics in creative techniques and investigation for technical theatre. May be repeated for credit with change in topic. Pr.: THTRE 266 and consent of instructor. THTRE-711-0-1007

THTRE 712. Theatre Management. (3). Theatre management, promotion, finance, organization; emphasis on contract negotiations and use of facilities. THTRE-712-0-1007

THTRE 761. Advanced Acting. (3). Studies in style, technique, and characterization. May be repeated once. Pr.: THTRE 361 and consent of instructor. THTRE-761-1-1007

THTRE 762. Advanced Playwriting. (3). Further study in the writing of drama; emphasis on problems of writing full-length plays. May be repeated for a total of nine hours credit by qualified students. Pr.: Consent of instructor. (Same as ENGL 762.) THTRE-762-0-1007

THTRE 763. Reader's Theatre. (3). The nature, purpose and production of oral interpretation of literature in the theatre; emphasis on monologue, lecture-recital, and play reading. May be repeated for a total of six hours credit by qualified students. Pr.: Consent of instructor. THTRE-763-1-1007

THTRE 764. Early American Theatre. (3). Studies in the drama and stagecraft of the colonies and the United States from the beginnings to 1900. Pr.: Junior standing. THTRE-764-0-1007

THTRE 765. Practice in Directing. (3). A lec.-lab course with emphasis on directing dramatic productions under performance conditions. May be repeated for a total of nine hours credit by qualified students. Pr.: Consent of instructor. THTRE-765-1-1007

THTRE 766. Advanced Technical Production. (3). A lec.-lab course in advanced technical theatre problems of organization, planning, and execution of scenery, costumes, and lighting. May be repeated for a total of nine hours credit by qualified students. Pr.: Consent of instructor. THTRE-766-1-1007

THTRE 767. Theatre Costume Design. (3) II. Studies in theory and practice of costume design for the theatre. May be repeated for a total of six hours credit by qualified students. Pr.: THTRE 367 or consent of instructor. THTRE-767-1-1007

THTRE 768. Scene Design. (3). Principles and styles of design for the stage, utilizing sketches, diagrams, plates, and models. May be repeated for a total of six hours credit by qualified students. Pr.: Consent of instructor. THTRE-768-0-1007

THTRE 769. Stage Lighting. (3). I, II. Theory and practice of production lighting design, control systems, projection equipment, and lighting consulting. May be repeated for a total of six hours credit by qualified students. Pr.: THTRE 266 or consent of instructor. THTRE-769-1-1007

THTRE 770. Greek Theatre. (3). Studies in the drama and stagecraft of the Greek period. THTRE-770-0-1007

THTRE 771. Roman, Medieval, and Baroque Theatre. (3). Studies in the drama and stagecraft of the Roman, Medieval, and Baroque periods. THTRE-771-0-1007

THTRE 772. Romantic Theatre. (3). Studies in the drama and stagecraft of the Romantic era. THTRE-772-0-1007

THTRE 773. Modern European Theatre. (3). Studies in the European drama and stagecraft of the period from 1876 to the end of World War II. THTRE-773-0-1007

THTRE 774. Avant-Garde Theatre. (3). Studies in Avant-Garde drama and stagecraft since World War II. THTRE-774-0-1007

THTRE 776. Slavic Theatre. (3). Studies in the drama and stagecraft of the Slavic countries from 1800 to the present. Pr.: Junior standing. THTRE-776-0-1007

THTRE 777. Aesthetics of the Theatre. (3). Principal emphasis on theoretical problems of dramatic art. THTRE-777-0-1007

THTRE 778. History of the Physical Stage. (3). A survey course in the emergence and development of the theatre building as a distinct architectural form, with particular emphasis on the effect of the physical environment on the play. Pr.: THTRE 266. THTRE-778-0-1007

THTRE 779. Repertory Theatre. (3). Concentrated studies in theory and practice of repertory theatre productions. Reading, demonstrations, study of play scripts; play selection and production methods; operation of and assistance in production of plays in repertory. May be repeated for a total of twelve hours credit by qualified students. Pr.: Consent of instructor. THTRE-779-2-1007

THTRE 780. Theatre Technical Direction. (3) II. In alternate years. Lec.-lab course providing study of theatrical engineering systems. Pr.: THTRE 266 and consent of instructor. THTRE-780-0-1007

THTRE 782. Women in Theatre. (3). A history of the contributions made by women in theatre as playwrights, managers, directors, and performers; contemporary women in theatre and their experiments in expressing women's consciousness. THTRE-782-0-1007

THTRE 783. Practice in Acting. (3). Advanced studies in characterization with emphasis on communicating with the director. Taught in conjunction with the Practice in Directing workshop. May be repeated once. Pr.: THTRE 361 and consent of instructor. THTRE-783-1-1007

Graduate credit

THTRE 862. Workshop in Playwriting. (3). Advanced writing of drama. May be repeated once for credit. Same as ENGL 862. Pr.: THTRE 762 (or ENGL 762) or proof of equivalent proficiency. THTRE-862-0-1007

THTRE 870. Seminar in Theatre. (3). Selected topics in theatre research. May be repeated for credit with change of topic. THTRE-870-0-1007

Statistics

Arthur Dayton,* head of department

Professors Dayton,* Feyerherm,* Higgins,* Johnson,* Kemp,* Milliken,* Nassar,* Perng;* Associate Professors Boyer,* Grosh,* and Yang;* Assistant Professors Deaton,* Henry, and Sundheim;* Emeritus: Professor Fryer.

Undergraduate study

Statistics is a combination of classical mathematics, the theory of probability, and some new concepts related to inductive reasoning which have developed during the past three-quarters of a century.

Almost all activities of plants and animals (including man) depend to some degree on chance events, and most decisions made by mankind depend on sampling information—which also depends on chance events, and hence on probability. Consequently, the field of interest and activity for a statistician potentially is very broad.

Likewise, the professional activities open to a trained statistician are quite varied. The existence of modern-day computers relieves the statistician of tedious computations and elevates his professional activity to dealing with people and/or engaging in basic research.

A person wishing to major in statistics may seek a bachelor of arts degree by satisfying the general requirements of that degree, completing MATH 240, Elementary Differential Equations, and doing one of the following:

Required for both options:

CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 20-	Computer language	2
STAT 510	Introductory Probability & Statistics I **and**	3
STAT 511	Introductory Probability & Statistics II	3
	or	
STAT 700	Theory of Statistics I **and**	3
STAT 771	Theory of Statistics II	3
	One additional statistics course	

Option A
Take one of these four courses:

STAT 320	Elements of Statistics	3
STAT 330	Elementary Statistics for the Social Sciences	3
STAT 340	Biometrics I	3
STAT 350	Business & Economic Statistics I	3

And take:

STAT 341	Biometrics II	3
	or	
STAT 351	Business & Economic Statistics II	3

Option B

STAT 702	Statistical Methods for Social Sciences	3
	or	
STAT 703	Statistical Methods for Natural Scientists	3
STAT 704	Analysis of Variance & Covariance	2
STAT 705	Regression & Correlation Analyses	2

A student may seek a bachelor of science degree by satisfying the general requirements of that degree and the same requirements as noted for the bachelor of arts degree. It also is recommended that such a student take extra courses in computer science, or otherwise gain extra experience in programming. Each student must consult an advisor in the Department of Statistics before enrolling.

Graduate study

The Department of Statistics offers graduate studies leading to the master of science and doctor of philosophy degrees in probability and statistics.

Many graduate majors in statistics have majored in some other area as undergraduates. If the student has had mathematics through the calculus and twelve additional credits in mathematics and/or statistics, the master's degree in statistics can be earned in the normal time.

Persons who have earned the master's degree in statistics may study toward the doctor's degree, enter industry or governmental service, or join organizations which do scientific research. Holders of the master's degree also may be teachers in some colleges and universities, but it is preferable to plan to obtain the doctorate if the student wishes to enter the teaching profession at the college or university level.

A student may work toward a doctor of philosophy degree either in mathematical probability and statistics or in applied probability and statistics. The former includes more of the advanced theory whereas the latter replaces some of the advanced theory with instruction and experience in the uses to which the basic theory can be put.

Teaching and research assistantships are available on a competitive basis. Federal fellowships also are available to excellent students upon application directly to the agency offering such fellowships.

Courses in statistics

Undergraduate credit

STAT 300. Sophomore Honors Seminar in Statistics. (3) I. Selected topics. May not be used to satisfy quantitative requirements for B.S. degree. Open only to students in the Honors Program. STAT-300-0-1702

STAT 320. Elements of Statistics. (3) I, II. A basic first course in probability and statistics; frequency distributions; averages and measures of variation; probability; simple confidence intervals and tests of significance appropriate to binomial and normal populations; correlation and regression, including confidence intervals and tests of significance for bivariate populations. Pr.: MATH 100. STAT-320-0-1702

STAT 330. Elementary Statistics for the Social Sciences. (3) I, II, S. A basic first course in probability and statistics with textbook, examples and problems aimed toward the social sciences and humanities. Frequency distributions, averages, measures of variation, probability, confidence intervals; tests of significance appropriate to binomial, multinomial, and normal sampling; simple regression and correlation. Pr.: MATH 100. Cannot be taken for credit if credit has been received for STAT 320, 340, or 350. STAT-330-0-1702

STAT 340. Biometrics I. (3) I, II. A basic first course in probability and statistics with textbook, examples and problems aimed toward the biological sciences. Frequency distributions, averages, measures of variation, probability, confidence intervals; tests of significance appropriate to binomial, multinomial, Poisson, and normal sampling; simple regression and correlation. Pr.: MATH 100. Cannot be taken for credit if credit has been received for STAT 320, 330, or 350. STAT-340-0-1702

STAT 341. Biometrics II. (3) II. Analysis and interpretation of biological data using analysis of variance, analysis of covariance, and multiple regression. Negative binomial distribution and its applications. Pr.: STAT 320, 330, 340, or 350. STAT-341-0-1702

STAT 350. Business and Economic Statistics I. (3) I, II, S. A basic first course in probability and statistics with textbook, examples, and problems pointed toward business administration and economics. Frequency distributions, averages, index numbers, time series, measures of variation, probability, confidence intervals, tests of significance appropriate to binomial, multinomial, Poisson, and normal sampling; simple regression and correlation. Pr.: MATH 100. Cannot be taken for credit if credit has been received for STAT 320, 330, or 340. STAT-350-0-1702

STAT 351. Business and Economic Statistics II. (3) I, II, S. Continuation of STAT 350 including study of index numbers, time series, business cycles, seasonal variation, multiple regression and correlation, forecasting; some nonparametric methods applicable in business and economic studies. Pr.: STAT 320, 330, 340, or 350. STAT-351-0-1702

STAT 410. Statistics for Computer Science. (3) II. Elementary theory of random variables and their probability distributions with application to simulation of random phenomena. Pr.: MATH 220. STAT-410-0-1702

Undergraduate and graduate credit in minor field

STAT 510. Introductory Probability and Statistics I. (3) I, II. Descriptive statistics, probability concepts and laws, sample spaces; random variables; binomial, uniform, normal and Poisson; two-dimensional variates; expected values; confidence intervals; binomial parameter, median, normal mean and variance; testing simple hypotheses using CI's and X^2; goodness of fit. Numerous applications. Pr.: MATH 222. STAT-510-0-1702

STAT 511. Introductory Probability and Statistics II. (3) I, II. Law of Large Numbers, Chebycheff's Inequality; continuation of study of continuous variates; uniform, exponential, gamma, and beta distribution; Central Limit Theorem; distributions from normal sampling; introduction to statistical inference. Pr.: STAT 510. STAT-511-0-1702

STAT 550. Basic Elements of Statistical Theory. (3) I. The mathematical representation of frequency distributions, their properties, and the theory of estimation and hypothesis testing. Elementary mathematical functions illustrate theory. Pr.: MATH 220 or 500. STAT-550-0-702

Undergraduate and graduate credit

STAT 702. Statistical Methods for Social Sciences. (3) I, II. Statistical methods applied to experimental and survey data from social sciences; test of hypotheses concerning treatment means; linear regression; product-moment, rank, and bi-serial correlations; contingency tables and chi-square tests. Pr.: STAT 330. STAT-702-0-1702

STAT 703. Statistical Methods for Natural Scientists. (3) I, II, S. Statistical concepts and methods basic to experimental research in the natural sciences; hypothetical populations; estimation of parameters; confidence intervals; parametric and non-parametric tests of hypotheses; linear regression; correlation; one-way analysis of variance; t-test; chi-square test. Pr.: Junior standing and equiv. of college algebra. STAT-703-0-1702

STAT 704. Analysis of Variance and Covariance. (2) I, II, S. Computation and interpretation for two- and three-way analyses of variance; multiple comparisons; analysis of covariance; applications including use of computers. Meets four times a week during first half of semester. Pr.: STAT 702 or 703. STAT-704-0-1702

STAT 705. Regression and Correlation Analyses. (2) I, II, S. Multiple regression and correlation concepts and methods; curvilinear regression; applications including use of computers. Meets four times a week during second half of semester. Pr.: STAT 702 or 703. STAT-705-0-1702

STAT 707. Applied Linear Statistical Models. (3) I. A unified approach to the application of linear statistical models in regression, analysis of variance and covariance, basic experimental design problems and their application in management, management sciences and social sciences. Use of residual analysis for examining the aptness of models. Pr.: Six semester hours of statistics or STAT 702. STAT-707-0-1702

STAT 708. Use of Statistical Computer Packages. (1). Intersession only. Processing data sets using SAS (Statistical Analysis System) for analysis of variance, regression and correlation analysis, chi-square, multivariate statistical analyses, and graphic displays using both the line printer and Calcomp plotter. Pr.: STAT 704, STAT 705, or consent of instructor. STAT-708-0-1702

STAT 710. Sample Survey Methods. (2) II. Design, conduct, and interpretation of sample surveys. Pr.: STAT 702 or 703. Meets four times a week during first half of semester. STAT-710-0-1702

STAT 716. Non-Parametric Statistics. (2) II. Hypothesis testing when form of population sampled is unknown: rank, sign, chi-square, and slippage tests; Kolmogorov and Smirnov type tests; confidence intervals and bands. Meets four times a week during second half of semester. Pr.: One previous course in statistics. STAT-716-0-1702

STAT 717. Categorical Data Analysis. (2) II. Analysis of categorical data arranged in two and higher-dimensional contingency tables using log linear models. Meets four times a week during first half of semester. Pr.: STAT 704, STAT 705. STAT-717-0-1702

STAT 718. Survival Data Analysis. (2) II. Estimation and comparison of survival functions with identification of prognostic and risk factors using some nonparametric techniques with application to life-testing and survival data. Meets four times a week during second half of semester. Pr.: STAT 704, STAT 705. STAT-718-0-1702

STAT 720. Design of Experiments. (3) I, S. Planning experiments so as to minimize error variance, and avoid bias; Latin squares; split-plot designs; switch-back or reversal designs; incomplete block designs; efficiency. Pr.: STAT 704 and 705. STAT-720-0-1702

STAT 725. Digital Statistical Analysis. (3) II. Use of FORTRAN to implement algorithms for computing statistical analyses of data including means, standard deviations, correlations, regression, and analysis of variance. Generation of pseudo random numbers, probability distributions, and simulation techniques. Writing SAS procedures in FORTRAN. Use of the calcomp plotter for data display. JCL (Job Control Language) used to create disk and tape files and to create load modules. Pr.: CMPSC 201 and STAT 704 and 705, or conc. enrollment. STAT-725-0-1702

STAT 730. Multivariate Statistical Methods. (3) I. Multivariate analysis of variance and covariance; classification and discrimination; principal components and introductory factor analysis; canonical correlation; digital computing procedures applied to data from natural and social sciences. Pr.: STAT 704, 705, and course in matrices. STAT-730-0-1702

STAT 770. Theory of Statistics I. (3) I. Probability models, concepts of probability, random discrete variables, moments and moment generating functions, bivariate distributions, continuous random variables, sampling, Central Limit Theorem, characteristic functions. More emphasis on rigor and proofs than in STAT 510 and 511. Pr.: MATH 222. STAT-770-0-1702

STAT 771. Theory of Statistics II. (3) II. Introduction to multivariate distributions; sampling distributions, derivation and use; estimation of parameters, testing hypothesis; multiple regression and correlation; simple experimental designs; introduction to non-parametric statistics; discrimination. Pr.: STAT 770. STAT-771-0-1702

STAT 799. Topics in Statistics. (Var.) I, II, S. Pr.: STAT 703 or 770 and consent of instructor. STAT-799-3-1702

Graduate credit

STAT 810. Seminar in Probability and Statistics. (1) I, II. Discussion and lectures on topics in probability and statistics; one seminar talk by each student registered for credit. Pr.: Graduate standing and at least two graduate courses in statistics. STAT-810-0-1702

STAT 820. Experimental Design Theory. (3) II. Incomplte block designs; theory of the construction and analysis of experimental designs. Pr.: STAT 720 and course in matrices. STAT-820-0-1702

STAT 840. Theory of Statistics III. (3) I. Introduction to probability theory, distribution functions, characteristic functions, asymptotic distributions, modes of convergence, central limit theory. Pr.: STAT 771. STAT-840-0-1702

STAT 841. Theory of Statistics IV. (3) II. Conditional probability, sufficiency and completeness, exponential families, general point estimation, unbiased estimation, invariant estimation, Bayesian estimation, large sample theory. Pr.: STAT 840. STAT-841-0-1702

STAT 850. Stochastic Processes I. (3) II. Generating functions; conditional probability and conditional expectations; normal processes and covariance stationary processes; Poisson processes; renewal processes; Markov chains, discrete time. Pr.: STAT 770. STAT-850-0-1702

STAT 851. Stochastic Processes II. (3) I. Markov chains, discrete time; Markov chains continuous time; birth-death processes; Kolmogorov differential equations; diffusion processes, forward and backward Kolmogorov equations; applications. Pr.: STAT 850. STAT-851-0-1702

STAT 860. Linear Models I. (3) I. Multivariate normal covariance matrix and operations with it; distribution of quadratic forms; some specific linear models; application to experimental design, analysis of variance and variance components. Pr.: STAT 704, 705, 771; course in matrices. STAT-860-0-1702

STAT 861. Linear Models II. (3) II. Generalized inverses; polynomial regression; experimental design, variance-component, and mixed models. Pr.: STAT 860. STAT-861-0-1702

STAT 870. Non-Orthogonal Data Analysis. (3) I. Computation and interpretation for one, two, and n-way analysis of variance and analysis of covariance problems with equal and unequal variances; fixed, random, and mixed model; all the above for unequal sample sizes. Pr.: STAT 861. STAT-870-0-1702

STAT 880. Time Series Analysis I. (3) I. Stationary processes, autocorrelation function, spectral density, autoregressive moving average processes, models with autocorrelated errors, stochastic difference equations, finite parameter model fitting, forecasting. Pr.: STAT 705 and 770. STAT-880-0-1702

STAT 881. Time Series Analysis II. (3) II. Spectrum analysis, multivariate processes, nonstationary and nonlinear time series. Pr.: STAT 880. STAT-881-0-1702

STAT 898. Master's Report. (2) I, II, S. Pr.: Consent of instructor. STAT-898-4-1702

STAT 899. Master's Thesis Research. (Var.) I, II, S. Pr.: Consent of instructor. STAT-899-4-1702

STAT 945. Problems in Statistical Consulting. (Var.) I, II, S. Principles and practices of statistical consulting. Supervised experience in consultation and consequent research concerning applied statistics and probability associated with on-campus investigations. Pr.: STAT 704, 705 and 771. STAT-945-2-1702

STAT 950. Advanced Studies in Probability and Statistics. (3) I, II, S. Theoretical studies of advanced topics in probability, decision theory, Markov processes, experimental design, stochastic processes, or advanced topics. May be repeated. Pr.: STAT 771 and consent of instructor. STAT-950-0-1702

STAT 965. Multivariate Analysis I. (3) I. Matrix formulas, Jacobian of matrix transformations, likelihood estimates; Hotelling's T^2; generalized F, generalized beta, generalized Cochran's Theorem; distributions of simple, partial, and multiple correlation coefficients; testing multivariate hypothesis; exact and asymptotic distributions of test statistics. Pr.: STAT 861 and one year of advanced calculus. STAT-965-0-1702

STAT 966. Multivariate Analysis II. (3) II. Classification and discrimination; canonical correlations; distributions of roots of determinantal equations; multivariate analysis of variance; union-intersection principles; simultaneous confidence estimation; multiple comparisons; nonparametric multivariate inference. Pr.: STAT 965. STAT-966-0-1702

STAT 990. Foundations of Probability I. (3) I. In alternate years. Distribution functions; characteristic functions; sums of independent random variables; Central Limit Theorem. Pr.: Equiv. of two semesters of advanced calculus. STAT 840. STAT-990-0-1702

STAT 991. Foundations of Probability II. (3) II. Conditional random variables, martingales, ergodic theorems. Pr.: STAT 990. STAT-991-0-1702

STAT 995. Advanced Inference I. (3) I. Statistical decision problem, risk functions, and optimal procedures; classical and Bayesian sufficient statistics; estimation: least squares, moments, maximum likelihood, best unbiased, least invariant estimations; asymptotic optimal maximum likelihood procedures. Pr.: Equiv. of two semesters of advanced calculus. STAT 841. STAT-995-0-1702

STAT 996. Advanced Inference II. (3) II. Testing hypotheses: Neyman-Pearson Lemma; monotone likelihood ratio and exponential families; method of least favorable distribution; uniformly best unbiased and best invariant procedures; confidence sets and uniformly best test procedures. Pr.: STAT 995. STAT-996-0-1702

STAT 999. Research in Statistics. (Var.) I, II, S. Pr.: Consent of instructor. STAT-999-4-1702

College of Business Administration

AHERN, MICHAEL, Instr. of Marketing (1981). BS 1979, MBA 1981, Kan. St. Univ.

ANDRUS, DAVID M., Asst. Prof. of Marketing (1983). PhD 1981, Univ. of Iowa.

ARTHUR, CHARLES S., Instr. of Accounting (1983). BS 1967, Kan. St. Univ.; MLL 1970, N.Y. Univ.

BALL, RALPH G., Instr. of Management (1983). BS 1959, Kan. St. Univ.; LLB 1963, Washburn Univ.

BARTON-DOBENIN, JOSEPH, Prof. of Management (1958). BS 1956, MA 1958, PhD 1966, Univ. of Neb. (GF)

BROWN, RICHARD E., Prof. of Accounting (1984). BS 1959, Hope Col.; MS 1961, Univ. of Mich.; PhD 1968, Harvard Univ.

BROWN, THOMAS L., Prof. of Marketing and Asst. Dean (1972). BS 1966, MBA 1968, PhD 1972, Okla. St. Univ. (GF)

BUZENBERG, MILDRED E., Asst. Prof. of Management Emerita (1964). BA 1938, Mich. St. Univ.; MS 1951, Kan. St. Univ.

CASTRO, CONSTANZA, Instr. in Management (1976). BS 1975, Univ. of Ore.; MBA 1976, Kan. St. Univ.

CHALMERS, JOHN, Prof. of Finance and Economics (1963). AB 1938, Middlebury Col.; PhD 1943, Cornell Univ. (GF)

CHEN, CHI TI, Instr. of Marketing (1980). BAgr 1973, Col. of Chin. Culture Hort.; MS 1979, MS 1982, Kan. St. Univ.

CHOI, SUCK-SHIN, Prof., International Trade Institute (1983). MA 1977, Korea.

CLARK, WILLIAM J., Prof. of Accounting Emeritus (1946). BS 1929, Pittsburg St. Univ.; MA 1940, St. Univ. of Iowa; CPA 1954, Kansas. (GF)

COLEMAN, RAYMOND J., Prof. of Marketing and Dir. of International Trade Institute (1965). BS 1948, Univ. of Kan.; MA 1963, Central Mo. St. Univ.; PhD 1967, Univ. of Ark. (GF)

COLEMAN, RICHARD P., Prof. of Marketing (1981). BA 1943, Univ. of Tulsa; MA 1949, Univ. of Iowa; PhD 1959, Univ. of Chicago. (GF)

DEIHL, LINCOLN W., Prof. of Management (1979). BS 1949, Bowling Green St. Univ.; MS 1951, Ind. Univ.; PhD 1964, Ohio St. Univ.

DEINES, DAN, Asst. Prof. of Accounting (1982). BA 1970, Ft. Hays St. Univ.; MS 1974, Emporia St. Univ.

DILTS, DAVID A., Assoc. Prof. of Management (1980). BS 1974, MA 1975, Ball St. Univ.; PhD 1978, Ind. Univ. (GF)

DONNELLY, DAVID P., Asst. Prof. of Accounting (1977). BS 1973, MBA 1977, Kan. St. Univ.; PhD 1983, Univ. of Ill.; CPA 1973, Kansas.

DRIESBACH, KIM, Instr. of Accounting (1981). BS 1975, MAcc 1981, Kan. St. Univ.; CPA 1977, Kansas.

DUDIS, KATHLEEN J., Instr., International Trade Institute (1983). MA 1983, Ga. St. Univ.

EBADI, YAR M., Assoc. Prof. of Management (1983). PhD 1977, Ind. Univ.

ERIKSEN, CONRAD J.K., Assoc. Prof. of Finance Emeritus (1946). BA 1929, Univ. of Kan.; MBA 1931, Harvard Univ.

FATEMI, ALI, Asst. Prof. of Finance (1980). BA 1972, Tehran Bus. Col.; MBA 1975, PhD 1979, Okla. St. Univ. (GF)

FICK, HOWARD, Instr. of Management (1983). BA 1958, JD 1969, Washburn Univ.

FOX, KENNETH L., Prof. of Accounting (1969). BA 1953, MA 1960, Baylor Univ.; CPA 1958, Texas, Louisiana; CPA 1971, Kansas; PhD 1966, Univ. of Ill. (GF)

GRAHAM, JOHN, Prof. of Accounting (1970). BA 1967, Kan. St. Univ.; MBA 1968, PhD 1970, Univ. of Ark. (GF)

GUDGELL, DOROTHY B., Asst. Prof. of Accounting Emerita (1943). BS 1938, MS 1946, Kan. St. Univ.

HARRISON, PAUL D., Asst. Prof. of Accounting (1982). BS 1976, MBA 1977, Kan. St. Univ.; DBA 1982, Ariz. St. Univ.

HARTMAN, JACKIE, Instr. of Business Administration (1981). BS 1980, Kan. St. Univ.

HAYCOCK, ANN, Instr. of Accounting (1980). BS 1963, Sacramento St. Col.; M.Acc. 1980, Kan. St. Univ.

HILL, DONALD R., Instr. of Management (1983). BA 1956, MA 1960, Kan. St. Univ.; JD 1966, Washburn Univ.

HOLLINGER, ROBERT D., Assoc. Prof. of Finance (1966). BS 1964, MS 1968, PhD 1973, Kan. St. Univ. (GF)

HOSTETLER, CHARLES H., Instr. of Finance (1983). BA 1960, Kan. St. Univ.; LLB 1963, Univ. of Kan.

INNES, LINDA L., Instr. of Business Administration (1975). BS 1960, MS 1974, Kan. St. Univ.

INNES, RONALD D., Instr. of Management (1983). BA 1960, Kan. St. Univ.; LLB 1963, Washburn Univ.

JOHNSON, JAMES C., Instr. of Management (1983). BA 1957, LLB 1969, Univ. of Kan.

JONES, C. CLYDE, Prof. of Management (1960). AB 1944, Marshall Univ.; MA 1950, PhD 1954, Northwestern Univ. (GF)

KIM, CHANG S., Asst. Prof. of Management (1982). BS 1975, Seoul National Univ.; MA 1979, Univ. of Neb.

KRAMER, BRADLEY A., Instr. of Management (1983). MA 1981, Kan. St. Univ.

LAUGHLIN, EUGENE J., Prof. of Accounting (1955). BS 1951, Rockhurst Col.; MS 1959, Kan. St. Univ.; CPA 1960, Kansas; PhD 1965, Univ. of Ill. (GF)

LYNN, ROBERT A., Dean; Prof. of Marketing (1968). BS 1951, Maryville Col.; MS 1955, Univ. of Tenn.; PhD 1958, Univ. of Ill. (GF)

LOPEZ, CAROL ROSE, Instr., International Trade Institute (1983). MA 1983, Caracas.

MILLER, PAUL E., Instr. of Management (1983). BA 1969, Kan. St. Univ.; JD 1972, Univ. of Kan.

MORRILL, ANN M., Instr. of Management (1982). AA 1975, York Col.; BS 1977, Kan. St. Univ.; MBA 1981, Memphis St. Univ.

MULANAX, ALVIN E., Assoc. Prof. of Marketing Emeritus (1947). BS 1946, MS 1951, Kan. St. Univ. (GF)

NORVELL, WAYNE, Assoc. Prof. of Marketing (1977). BS 1964, Ark. Polytechnic Col.; MBA 1965, Univ. of Ark.; DBA 1973, Miss. St. Univ. (GF)

O'BRIEN, TERRENCE V., Prof. and Head, Department of Marketing (1976). AB 1963, Univ. of Calif. at Berkeley; MBA 1966, Calif. St. Univ. at Long Beach; PhD 1969, Columbia Univ. (GF)

PAUL, ROBERT J., Prof. and Head, Department of Management (1978). BBA 1954, Univ. of Wis.; MS 1962, Okla. St. Univ.; PhD 1966, Univ. of Ark. (GF)

POHLMAN, RANDOLPH A., Assoc. Prof. and Head, Dept. of Finance (1976). BS 1967, MS 1969, Kan. St. Univ.; PhD 1976, Okla. St. Univ. (GF)

RICHARDS, VERLYN D., Prof. of Finance (1965). BS 1956, MS 1960, Kan. St. Univ.; CPA 1961, Kansas; PhD 1967, Univ. of Ill.

RILEY, MERRILL J., Asst. Prof. of Business Administration (1966). BS 1951, John Brown Univ.; MBA 1955, Univ. of Ark.

SANTIAGO, EMMANUEL S., Asst. Prof. of Finance (1982). MA 1978, Kan. St. Univ.

SHARP, WANDA H., Instr. of Management (1983). MA 1981, Kan. St. Univ.

STARK, MAURICE E., Prof. and Head, Department of Accounting (1976). BS 1959, MS 1966, Kan. St. Univ.; PhD 1972, Univ. of Mo.; CPA 1961, Kansas; 1968, Michigan. (GF)

STEWART, KAY C., Asst. to Dean; Instr. in Business Administration (1972). BS 1966, W. Va. Inst. of Tech.; MS 1971, Ft. Hays St. Univ.

STRECKER, MARY F., Assoc. Prof. of Accounting (1978). AB 1965, Fontbonne Col.; MS 1971, Wichita St. Univ.; MBA 1971, Univ. of Notre Dame; PhD 1974, Univ. of Mo. (GF)

THIESSEN, EMIL A., Assoc. Prof. of Business Administration Emeritus (1968). AB 1948, Tabor Col.; MS 1951, Emporia St. Univ.; EdD 1959, Colo. St. Col. (GF)

THULL, GARY L., Instr., International Trade Institute (1982). MA 1980, Kan. St. Univ.

TOWNSEND, JAMES B., Assoc. Prof. of Management (1977). BS 1945, U.S. Military Acad.; MA 1964, DBA 1976, Geo. Wash. Univ. (GF)

VADEN, RICHARD E., Prof. of Management (1969). BBA 1960, The Univ. of Tex. at Austin; MBA 1965, DBA 1970, Tex. Tech. Univ. (GF)

VRUWINK, DAVID R., Asst. Prof. of Accounting (1982). BS 1973, Univ. of Wis.-Stevens Point; MBA 1976, Univ. of Wis.-Oshkosh; PhD 1982, Univ. of Ark.

WORTHINGTON, ROY H., Instr. of Finance (1983). JD 1973, Washburn Univ.

Business Administration

Robert A. Lynn,* dean
Thomas L. Brown,* assistant dean
Kay C. Stewart, assistant to the dean

110 Calvin Hall
532-6180

The main objective of the College of Business Administration is to provide a balanced program for general education and professional study in business administration and accounting.

The degree programs in business offered by the College of Business Administration, at both the undergraduate and graduate levels, are accredited by the American Assembly of Collegiate Schools of Business (AACSB).

Throughout a student's academic career, the business firm is examined as a vital social, economic, and political institution. To equip the prospective executive and specialist for future professional responsibilities, the college organizes instructional activities around two themes: one, the businessperson as the manager and decision-maker of operations in a particular firm; two, the businessperson as one who must analyze and adapt to the larger economic, social, and political environment of which he or she and the firm are integral parts. Both subject matter and instructional techniques focus on decision-making and implementation of decisions through critical and creative analysis.

The College of Business Administration also sponsors numerous short courses and conferences for business and management groups.

At the undergraduate level, the College of Business Administration seeks to produce a graduate with: a broad education in the arts, sciences, and humanities; a solid knowledge and understanding of the functioning of the business world; sufficient knowledge and skill in a field of specialization to obtain a position in business; and the proven ability to think creatively and analytically in order to progress into positions of greater responsibility in the future.

General Requirements

Bachelor of Science in Business Administration

Business Administration Pre-Professions. Students entering college for the first time and eligible for admission to Kansas State University must enroll in the Business Administration Pre-Professions Program (BAPP). Students with previous academic work (either Kansas State University or elsewhere) requesting transfer to the College of Business Administration must have a 2.0 or higher grade point average and enroll in the BAPP curriculum. For purposes of admission, grade point averages will be based on all courses attempted at colleges or universities.

The BAPP program provides coursework in communications, mathematics, social sciences, humanities and natural sciences. The purpose of the BAPP curriculum is to help the student develop the descriptive and analytical foundation of knowledge necessary for the study of business administration. Remaining "core courses" in business administration and courses in the five degree track majors are taken after successful completion of the BAPP program.

The BAPP is expressly designed as a non-degree program; students with 90 or more credit hours will not be allowed to enroll in BAPP. Students with over 90 hours who meet grade point requirements may be admitted into degree-track majors.

Admission to a degree-track major program in accounting, finance, general business, management, or marketing is necessary for graduation. Applicants for admission to one of the degree track majors will be accepted upon completion of a minimum of 60 credit hours with an overall grade point average of 2.25 or above. The 60 credit hours must include the following courses or their approved equivalents:

ACCTG 211	Financial Accounting	3
ACCTG 221	Managerial Accounting	3
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 2--	Computer Language	2
ECON 110	Economics I	3
ECON 120	Economics II	3
ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
HPER 101	Concepts of Physical Education	1
MATH 100	College Algebra	3
MATH 205	General Calculus & Linear Algebra	3
POLSC 325	U.S. Politics	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3
SPCH 106	Oral Communication 1A	3
STAT 350	Business & Economic Statistics I	3
Total credit hours of required courses		**44**

Communications electives (three hours selected from):		3
ENGL 200	Intermediate Composition	3
ENGL 301	Writing & the Law: Legislative Analysis	3
ENGL 405	Narrative Writing I	3
GENBA 391	Administrative Communications	3
JMC 275	Reporting I	3
SPCH 125	Argumentation & Debate	3
SPCH 127	Small Group Discussion Methods	3
SPCH 321	Public Speaking	3
SPCH 526	Persuasion	3
SPCH 527	Group Discussion Methods	3

Humanities electives (six hours selected from): 6
All courses in art,* modern languages, music,* philosophy, dance,* theatre;* ARCH 301; English: all literature plus four (230, 231, 233, 234) humanities courses; SPCH 235.

*All courses from these areas are acceptable; however, one may take a maximum of three credit hours total from these four areas in participation or artistic skill development courses.

Natural science electives (seven hours selected from): 7
All courses in biology, chemistry, geology, and physics; DEN 420, 425; GEOG 220, 221. Note: One laboratory course is required.

Total credit hours of elective areas	16
Total credit hours required for BAPP	60

The exact sequence of the courses to be taken is worked out between student and advisor. There is some flexibility in scheduling; to enroll in any course, students must have prerequisites as stated in the catalog.

Applications for a degree-track major must be made by November 15, April 1, or July 1 of the respective semester during which the student will have completed the 60 credit hour prerequisite requirements. Decisions for admission will be made as soon as possible after the end of the semester.

Degree requirements. Candidates for the Bachelor of Science in Business Administration must complete at least 27 credit hours of resident instruction in upper-division courses after acceptance and enrollment in a degree-granting program in the college. Exception may be considered for those who have consistently exceeded a 2.25 grade point average on upper-division courses applied toward the degree. See additional residency requirements earlier in this catalog.

Program of study. Students accepted into a degree-track major will develop, in consultation with their academic advisors during the first semester of enrollment, a program of study for the completion of their degrees. Specific requirements for each major are listed on the following pages.

Program Options

Dual degree in business administration

The dual degree programs allow students to earn the Bachelor of Science in Business Administration degree in addition to a nonbusiness degree. Because of course sequence requirements, the student should begin the dual degree program in the sophomore year. Students must be enrolled in both the college offering the nonbusiness degree and the College of Business Administration.

Any student who wishes to complete a dual degree must take a minimum of 150 credit hours and satisfy the requirements for both degrees. The business administration requirements include course work in the following areas: communications, quantitative, social sciences, economics, and business. For further information about the exact academic requirements, contact the Dean's Office, College of Business Administration, Calvin Hall, Manhattan, Kansas 66506.

Associate of Arts degree at Ft. Riley (A.A.)

In cooperation with the Division of Continuing Education, the College of Business Administration offers an A.A. degree at Ft. Riley, Kansas. This program is designed primarily for military personnel. Sixty-one semester hours of academic work are required to earn the degree. The requirements include work in: communications; mathematics; computer science; social, behavioral, and natural sciences; humanities; economics; and business. For information about the exact academic requirements, write Fort Riley Degree Program, Division of Continuing Education, Umberger Hall, Manhattan, Kansas 66506.

Pre-business education

Pre-business education majors are enrolled in and advised by the College of Education. Students interested in the field are instructed to refer to the College of Education section for details.

Pre-law

Law schools emphasize various objectives in pre-law study for the development of basic skills and insights. These objectives are: the acquisition of skills in comprehension and expression; understanding human institutions; and the ability to think clearly, carefully, and independently. A pre-law student enrolled in the College of Business Administration not only achieves these important goals, but also obtains a broad business background that is desirable preparation for the study of law.

Graduate study

The College of Business Administration provides graduate work leading to a Master of Business Administration (MBA) degree and a Master of Accountancy (M.Acc.) degree. Applications are welcomed from outstanding students with baccalaureate degrees in any field of study. Admission to these programs is granted to those students showing high promise of success in postgraduate business study. Following appraisal of prior scholastic performance, employment experience, and performance on the Graduate Management Admissions Test, the director of graduate studies in business, in consultation with the graduate studies committee, makes the admission recommendation to the Graduate School for the final review.

Admission with full standing requires that the applicant meet the following requirements of the Graduate School:

1. A bachelor's degree from an approved institution.

2. Adequate undergraduate preparation for the intended major field of study or equivalent evidence of an appropriate background for undertaking an advanced degree. (Provisional admission may be granted to applicants who have subject matter deficiencies in undergraduate preparation.)

3. An undergraduate grade average of 3.0 or above for the junior and senior years.

4. For international students, a score of at least 550 on the Test of English as a Foreign Language (TOEFL).

Applications for graduate study should be submitted to the Director of Graduate Studies, College of Business Administration, Calvin Hall, Manhattan, Kansas 66506. Deadlines for completed applications are:

Requested enrollment date	Deadline for completed application
Fall semester	July 15 (June 1 for international students)
Spring semester	December 15 (November 1 for international students)
Summer semester	May 1 (March 15 for international students)

College of Business Administration courses numbered 800 and above may only be taken by students who have been admitted to a Kansas State University graduate program. Special graduate students and seniors who qualify for graduate credit may not enroll in courses numbered 800 and above in the College of Business Administration.

Master of Business Administration

The Master of Business Administration (MBA) program at KSU is designed to provide professional managerial education to individuals who wish to pursue administrative careers in both the private and public sectors. On a solid foundation of the tools of quantitative analysis, the program builds a management model that emphasizes creative decision making, risk taking, strong interpersonal skills, and good business values.

The MBA curriculum is a 33-hour program of study that may be completed in two regular semesters and a summer session, or in three semesters. Before beginning the MBA curriculum, students without prior business training must acquire basic competency in the following eight areas: accounting, statistics, computer science, mathematics, economics, finance, marketing, and management. These competencies may be acquired through undergraduate course work. The specific number of undergraduate courses required depends on the applicant's prior academic work but generally should require no more than 24 credit hours. This basic competency course work may be taken after admission to the MBA program but must be completed prior to enrollment in the 33-hour graduate curriculum.

The 33-hour curriculum is divided into three major sections: analytical base, business core, and capstone. In addition, one graduate elective course and a comprehensive examination are required. The three major curriculum sections are sequenced and candidates should complete all courses in the analytical base before enrolling in any business core courses. In a similar manner, the entire business core is normally considered a prerequisite for enrollment in the two-course capstone. The graduate elective course may be taken at any time after admission. The comprehensive examination may only be taken in the final term of the student's program.

The following program of study is designed for full-time students. Students interested in part-time graduate study should contact the director about establishing the program that best meets their individual requirements for graduate business education.

MBA curriculum

Analytical base (12 hours) offered in the fall semester.

ACCTG 812	Accounting Controls for Business	3
STAT 707	Applied Linear Statistical Models	3
ECON 840	Managerial Economics	3
MANGT 866	Advanced Management Information Systems	3

Business core (12 hours) offered in the spring semester.

MANGT 893	Business Operations Analysis	3
FINAN 850	Financial Controls for Business	3
MKTG 840	Advanced Marketing Management	3
MANGT 820	Behavioral Management Theory	3

Capstone (6 hours) offered in the summer and fall semesters.

MANGT 888	Administrative Strategy	3
MANGT 891	Legal & Social Environment of Business	3

Graduate elective (3 hours)
Any 800 level course approved by student's supervisory committee.

The Graduate School section of this bulletin provides further information on the policies and procedures relating to graduate education at KSU.

Master of Accountancy

The objective of the Master of Accountancy (M.Acc.) program is to provide candidates with greater breadth and depth in accounting education than is possible in the baccalaureate or Master in Business Administration programs in preparation for careers as professional accountants.

Graduates of the program should be prepared to research various data bases related to troublesome accounting problems and to exercise judgment in making accounting-related decisions by drawing on their integrated and comprehensive body of accounting knowledge.

Common body of knowledge prerequisites. Advanced study in accounting at KSU builds upon certain basic areas of knowledge that all degree candidates must satisfy. These basic areas constitute the Common Body of Knowledge (CBK). In order to be admitted in full standing, each applicant must satisfy the CBK requirement, ordinarily through undergraduate course work. The CBK is defined by the following areas:[1]

(a) A background of the concepts, processes, and institutions in the production and marketing of goods and/or services, and the financing of the business enterprises or other forms of organization.
This portion of the CBK requirement is generally satisfied through a basic undergraduate course in each of three areas: marketing, finance, and production/operations management.

(b) A background of the economic and legal environment as it pertains to profit and/or nonprofit organizations along with ethical considerations and social and political influences as they affect such organizations.
Examples of courses that satisfy these requirements are economics (6 hours are expected), political science, business law, and business and society.

(c) A basic understanding of the concepts and applications of accounting, of quantitative methods, and information systems.
This area of the CBK requirement may be met through course work in statistics, calculus, computer programming, and accounting (course work covering the accumulation of accounting data and the management uses of these data).

(d) A study of organization theory, behavior, and interpersonal communications.
Course work in the areas of management, written and oral communication, sociology, and psychology are ordinarily used to satisfy this area of the CBK requirement.

(e) A study of administrative processes under conditions of uncertainty including integrating analysis and policy determination at the overall management level.
A course in business policy typically satisfies this requirement.

Accounting prerequisites. In addition to the CBK prerequisites, applicants must complete a minimum of 21 semester credits in the accounting discipline beyond principles of financial and management accounting. The 21 semester credits must include study in each of the following subject areas: the KSU undergraduate course or courses which together satisfy each subject area are listed following each area. Comparable courses or combinations of courses from other schools may also satisfy the requirement.

Financial accounting and accounting theory

ACCTG 311	Intermediate Accounting I	3
ACCTG 321	Intermediate Accounting II	3
ACCTG 411	Advanced Accounting	3

Management accounting

ACCTG 221	Managerial Accounting	3
ACCTG 312	Cost Accounting	3

Management information and computer systems

CMPSC 200	Fundamentals of Computer Programming	2
ACCTG 322	Accounting Information Systems	3

Financial and operational auditing

ACCTG 421	Auditing I	3

Taxation

ACCTG 422	Taxation I	3

Governmental and not-for-profit accounting

ACCTG 412	Public & Governmental Accounting	3

Each applicant's undergraduate transcripts (and previous graduate transcripts, if applicable) are analyzed for coverage of the CBK and accounting prerequisites. Provisional admission is granted to applicants who have subject matter deficiencies, which are then made up by enrolling in specified courses for undergraduate credit.

Generally, each candidate must complete the following program. Any exceptions must be arranged with the coordinator of the M.Acc. program.

M.Acc. required courses

ACCTG 811	Accounting Theory I	3
ACCTG 812	Accounting Controls for Business	3
ACCTG 813	Accounting Research	3
FINAN 850	Financial Controls for Business	3
MANGT 891	Legal & Social Environment of Business	3
		15

Select one (in consultation with coordinator of M.Acc. program):

MANGT 893	Business Operations Analysis	3
MANGT 820	Behavioral Management Theory	3
MANGT 890	Decision Theory	3
MANGT 866	Advanced Management Information Systems	3
MANGT 888	Administrative Strategy	3
		3

Select four (in consultation with the coordinator of the M.Acc. program); two courses must be at the 800 level:

ACCTG 822	Advanced Auditing	3
ACCTG 823	Tax Planning & Research	3
ACCTG 824	Accounting Theory II	3
ACCTG 825	Contemporary Accounting	3
ACCTG 611	Taxation II	3
		12

Comprehensive examination	0
Minimum hours required for graduation	30

It is recognized that different schools use different names for courses referred to above.

International Trade Institute

The International Trade Institute (ITI) was created by the 1980 Kansas legislature as an integral part of Kansas State University's College of Business Administration to assist students as well as Great Plains agricultural and industrial interests in meeting the challenges of expanded world trade.

The ITI links the efforts of private firms and individuals to the University in a comprehensive program of international trade research, education and service.

The staff of the ITI is available and welcomes advising opportunities with students from any curriculum regarding the international aspects of a curriculum.

Some of the activities sponsored by the ITI include: international marketing seminars; trade conferences focusing on different regions of the world (examples include Mexico, The Republic of China, and the Arabian Peninsula); a student work exchange with Bordeaux, France; publications of various studies, proceedings, and news items; and a prospecting brochure for Midwest manufacturers.

For information on the ITI, contact Dr. Raymond Coleman, 532-6799. The ITI is located next to the Ramada Inn, 1627 Anderson Avenue.

Accounting

Maurice E. Stark,* head of department

Professors Fox,* Graham,* Laughlin,* and Stark;* Associate Professor Strecker;* Assistant Professors Deines, Donnelly, Harrison, and Vruwink; Instructors Driesbach, Haycock, Hoisington, Lyle, and Waugh; Emeriti: Professor Clark; Associate Professor Gugler; Assistant Professor Gudgell.

Accounting is often called the "language of business" as its terms and concepts are used to describe the daily events of business. The accountant measures and reports to various users the relevant financial information necessary for decision making.

The objective of the undergraduate accounting program is to provide basic conceptual accounting and business knowledge as a foundation for accounting career development in all areas. The program requirements which accomplish these objectives are specified below.

Requirements for major in accounting

Business Administration Pre-Professional Program **60**
(see general section of the College of Business Administration)

Additional required courses:

STAT 351	Business & Economic Statistics II	3
FINAN 450	Business Finance	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MANGT 421	Production Operations Management	3
MANGT 596	Business Government & Society	3
MANGT 695	Business Strategy	3
MKTG 400	Marketing	3
ACCTG 311	Intermediate Accounting I	3
ACCTG 312	Cost Accounting	3
ACCTG 321	Intermediate Accounting II	3
ACCTG 322	Accounting Information Systems	3
ACCTG 411	Advanced Accounting	3
ACCTG 412	Public & Government Accounting	3
ACCTG 421	Auditing I	3
ACCTG 422	Taxation I	3
		48
Economics electives (see note 1 below)		6
Restricted general electives (in addition to those included in BAPP; see note 2 below)		9
Unrestricted electives (see note 3 below)		3
Total credit hours required		126

Note 1. Economics electives—economics electives for students in accounting must be selected from the courses (numbered above 120), offered by the Department of Economics in the College of Arts and Sciences. ECON 505, Introduction to the Civilization of South Asia I, and ECON 506, Introduction to the Civilization of South Asia II, may not be used to fulfill the economics elective requirements.

Note 2. Restricted general electives—courses may be selected from any or all of the following areas: humanities, natural science, social sciences, and quantitative.

Acceptable humanities and natural science electives are the same as those listed in the BAPP program.

Acceptable social science electives are all courses listed under the following departments; anthropology; economics; geography; history; political science; psychology; and sociology, anthropology and social work.

Acceptable quantitative electives are: all courses in the computer science department numbered 300 or above; MATH 211, Analytic Geometry & Calculus II; MATH 222, Analytic Geometry & Calculus III; and all courses in the statistics department numbered 300 or above.

Note 3. Unrestricted electives—an unrestricted elective may be any course (numbered 100 or above) offered for credit by a department at KSU.

Courses in accounting
Undergraduate credit

ACCTG 211. Financial Accounting. (3) I, II, S. The preparation and use of accounting records for individual, partnership, and corporate business organizations. Pr.: Sophomore standing. ACCTG-211-0-0502

ACCTG 221. Managerial Accounting. (3) I, II, S. Development and use of accounting information for management control. Covers statement analysis, cash and funds flows, cost systems and controls, and budgeting. Pr.: ACCTG 211 and MATH 100. ACCTG-221-0-0501

ACCTG 311. Intermediate Accounting I. (3) I, II, S. An in-depth exposure to the environment of accounting and application of accounting theory to the valuation of balance sheet accounts with emphasis on current assets. Pr.: ACCTG 221 and junior standing. ACCTG-311-0-0502

ACCTG 312. Cost Accounting. (3) I, II. Allocation of production costs to determine unit costs of goods manufactured and sold and the utilization of such data by management. Pr.: ACCTG 221. ACCTG-312-0-0502

ACCTG 321. Intermediate Accounting II. (3) I, II, S. A continuation of Intermediate Accounting I with emphasis on noncurrent and equity accounts. Pr.: ACCTG 311. ACCTG-321-0-0502

ACCTG 322. Accounting Information Systems. (3) I, II. Introduction to basic tools of systems analysis and their application in the development of information systems. Includes the synthesis of accounting and information systems concepts in a computer context. Pr.: ACCTG 311, CMPSC 200, and CMPSC 202. ACCTG-322-0-0502

ACCTG 411. Advanced Accounting. (3) I, II. Accounting for leases, pensions, consolidations, and liquidation of partnerships. Pr.: ACCTG 321. ACCTG-411-0-0502

ACCTG 412. Public and Governmental Accounting. (3) II. Accounting for governmental units and not-for-profit organizations. Current problems in public reporting. Pr.: ACCTG 321. ACCTG-412-0-0501

ACCTG 421. Auditing I. (3) I, II. An introduction to the environment of auditing and the objectives and techniques of both financial and operational auditing. Pr.: ACCTG 322. ACCTG-421-0-0502

ACCTG 422. Taxation I. (3) I, II, S. Fundamental concepts of income determination in federal and state income tax regulations; examination of the impact of tax regulations on business and personal financial planning and decision-making. Pr.: ACCTG 221 and junior standing. ACCTG-422-0-0501

ACCTG 431. Problems in Accounting. (Var.) I, II, S. Pr.: Background of courses needed for the problems undertaken and consent of instructor. ACCTG-431-2-0502

Undergraduate and graduate credit

ACCTG 611. Taxation II. (3) II. A study of the federal and state taxation of partnership and corporate income, estates and trusts, gift taxes and inheritance taxes. Course includes introduction to tax and estate planning. Pr.: ACCTG 422. ACCTG-611-0-0502

ACCTG 631. Accounting Internship. (3) I, II. Provides a full semester of practical accounting experience prior to entering graduate accounting program. Pr.: Twenty-four hours of accounting and admission to M.Acc. program. ACCTG-631-2-0502

Graduate credit

ACCTG 811. Accounting Theory I. (3) I. An intensive treatment of problems related to corporation accounting and reporting, with emphasis on income determination and balance sheet valuation. Pr.: Twenty-one hours of accounting. ACCTG-811-0-0502

ACCTG 812. Accounting Controls for Business. (3) I. The reliability of accounting data for business decisions and the relevance of such data to particular decisions are evaluated within the framework of changing economic conditions. Pr.: ECON 120 and ACCTG 221. ACCTG-812-0-0502

ACCTG 813. Accounting Research. (3) I. Introduction to accounting research methods and current research in financial, managerial, and public sector accounting, and auditing. Pr.: Twenty-one hours of accounting. ACCTG-813-0-0502

ACCTG 822. Advanced Auditing. (3) II. An in-depth exposure to authoritative auditing pronouncements and specialized topics, e.g.; statistical methods, EDP auditing, internal auditing, operational auditing, and audit management. Pr.: ACCTG 421 and eighteen hours of accounting. ACCTG-822-0-0502

ACCTG 823. Tax Planning and Research. (3) I. Intensive examination of specific problems in taxation of partnership and corporate income, gift taxes, and death taxes. Emphasis on research and tax planning. Pr.: Twenty-one hours of accounting including ACCTG 611. ACCTG-823-0-0502

ACCTG 824. Accounting Theory II. (3) II. A critical examination of accounting literature, with emphasis upon accounting theory and intensive study of current issues in accounting theory. Pr.: Twenty-one hours of accounting. ACCTG-824-0-0502

ACCTG 825. Contemporary Accounting. (3) II. An in-depth exposure to the current literature and pronouncements of accounting, particularly as they impact accounting and reporting practice. Pr.: Twenty-one hours of accounting. ACCTG-825-0-0502

Finance

Randolph A. Pohlman, head of department

Professors Chalmers* and Richards; Associate Professors Fatemi,* Hollinger* and Pohlman;* Assistant Professor Santiago.

The curriculum in finance allows for areas of emphasis in commercial banking, investment banking, and financial management of corporate and noncorporate business firms as well as offering courses in real estate and insurance. The finance major should have a broad understanding of business management concepts accompanied by a sound background in economic theory, management information systems, and quantitative techniques. The nature of their work also requires that financial managers possess effective communication skills, a basic understanding of taxation and commercial law, and an ability to work effectively with other internal and external participants involved in the management, financing, and regulation of business enterprises.

Financial managers specialize in controlling the resource investments required to support an enterprise's operating activities, planning and negotiating appropriate financing arrangements to support these investment requirements, and managing the risks inherent in an enterprise's investment and financing activities.

Requirements for major in finance

In addition to completing the 60-credit-hour Business Administration Pre-Professional Program, finance majors must complete the following requirements:

ACCTG 311	Intermediate Accounting I	3
FINAN 450	Business Finance	3
FINAN 550	Financial Institutions & Markets	3
FINAN 551	Introduction to Investments	3
FINAN 650	Capital Budgeting	3
FINAN 651	Financial Management	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MANGT 421	Production/Operations Management	3
MANGT 466	Management Information Systems	3
	or	
ACCTG 322	Accounting Information Systems	3
MANGT 596	Business, Government & Society	3
MANGT 695	Business Strategy	3
MKTG 400	Marketing	3
STAT 351	Business & Economics Statistics II	3

Total credit hours of required courses **42**

Accounting electives **3**
(One course selected from the following accounting courses in consultation with the student's academic advisor.)

ACCTG 312	Cost Accounting	3
ACCTG 321	Intermediate Accounting II	3
ACCTG 411	Advanced Accounting	3
ACCTG 421	Auditing I	3

Finance electives **6**
(Six credit hours selected from the following. At least three credits must be selected from courses numbered 500 or above.)

ACCTG 422	Taxation I	3
FINAN 350	Insurance	3
FINAN 351	Personal Financial Management	3
FINAN 552	Real Estate	3
FINAN 653	Securities & Portfolio Analysis	3
FINAN 654	International Financial Management	3
FINAN 655	Commercial Bank Management	3

Economics electives 6
(Economics electives must be selected from the Department of Economics (ECON) course offerings numbered 510 or above in consultation with the student's academic advisor. At least one course must be selected from either ECON 510, Intermediate Macroeconomics, or ECON 520, Intermediate Microeconomics.)

Additional economics requirements may not overlap with economics courses used in major field or social science electives.

Unrestricted electives 9
An unrestricted elective may be any course (numbered 100 or above) offered for credit by any University department.

Total credit hours of elective areas 24
Total credit hours required (including 60 BAPP) 126

Undergraduate credit

FINAN 350. Insurance. (3) I, II. A study of life, property, casualty, and health insurance from the purchaser's point of view with additional emphasis on the operation and contributions of the insurance industry. Pr.: ECON 110. FINAN-350-0-0512

FINAN 351. Personal Financial Management. (3). Conceptual and operational aspects of personal financial management with emphasis on tools and techniques of investment decisions and asset management, financing and liability management, and insurance and risk management. Pr.: ECON 110. FINAN-351-0-0501

FINAN 450. Business Finance. (3) I, II, S. Study of the financial performance characteristics for a business firm accompanied by analysis of the timing, risk and return attributes of the firm's underlying investment and financing policies. Pr.: ECON 120, STAT 350, CMPSC 200 and lab and ACCTG 270. FINAN-450-0-0504

FINAN 498. Problems in Finance. (Var.) I, II, S. Internship program and selected projects appropriate to the student's program of study. Pr.: Consent of department head based on background courses appropriate to the project selected. FINAN-498-2-0504

Undergraduate and graduate credit in minor field

FINAN 550. Financial Institutions and Markets. (3) II. The role of financial intermediaries and markets in facilitating the efficient financing of economic activity. Primary emphasis is on financial management concepts that underlie the operation of non-bank institutions in the financial system. Pr.: FINAN 450. FINAN-550-0-0504

FINAN 551. Introduction to Investments. (3) I. A study of investment institutions, and principles and practices from the individual viewpoint. Corporate, civil, foreign, and real estate investment are compared as to risk, return, and intrinsic value. Pr.: FINAN 450. FINAN-551-0-0505

FINAN 552. Real Estate. (3) I, II. Principles and practices including legal, economic, and social implications from the viewpoint of the real estate practitioner, investor, and society. Pr.: Junior standing. FINAN-552-0-0511

Undergraduate and graduate credit

FINAN 650. Capital Budgeting. (3) I. Development of a rational and systematic approach to formulating a firm's strategy for investing in productive facilities within an economy characterized by increasing technological change and uncertainty. Pr.: MATH 500, STAT 350 and FINAN 450. FINAN-650-0-0501

FINAN 651. Financial Management. (3) II. Analysis of problems in advanced financial planning and control. Pr.: MATH 500, STAT 350, and FINAN 450. FINAN-651-0-0501

FINAN 653. Securities and Portfolio Analysis. (3) II. A theoretical and empirical study of financial management techniques employed by the professional investor to evaluate the underlying risk-return tradeoff on a particular financial asset investment opportunity and the implications of efficient portfolio management techniques for modifying this risk-return tradeoff experience. Pr.: MATH 220 or 500, STAT 351, and FINAN 450. FINAN-653-0-0504

FINAN 654. International Financial Management. (3) I. An application of financial management concepts to investment, financing and managerial control decisions undertaken by the multinational firm within its institutional environment of monetary arrangements, financial intermediary organizations, and balance of payments considerations that affect the international flow of capital. Pr.: FINAN 450. FINAN-654-0-0504

FINAN 655. Commercial Bank Management. (3) I. An application of financial management concepts to the liquidity management, investment portfolio analysis, capital budgeting, and capital structure decision-making process required by a commercial bank to perform effectively its financial intermediation role within the financial system s institutional, regulatory, and competitive environment. Pr.: FINAN 450. FINAN-655-0-0504

Graduate credit

FINAN 850. Financial Controls for Business. (3) II. The data necessary to judge economic flexibility and risk of investment proposals, cost of capital, and capital structure are evaluated under static and dynamic assumptions regarding money and capital markets. Pr.: FINAN 450. FINAN-850-0-0506

FINAN 890. Seminar in Finance. (3) On sufficient demand. In-depth study of the contemporary issues in the field of finance. Pr.: FINAN 450 and consent of instructor. FINAN-890-0-0504

General Business

The general business major allows the student, in consultation with the academic advisor, to structure a program that fits individual interests. This major is especially appropriate for students who plan to operate their own businesses and who therefore need extensive background in all areas of business. It is also suitable for those who wish to emphasize certain types of advanced courses, such as those which stress business applications of quantitative techniques or the behavioral sciences.

Requirements for major in general business

In addition to completing the 60 credit hour Business Administration Pre-Professional Program, general business majors must complete the following requirements:

FINAN 450	Business Finance	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MANGT 421	Production/Operations Management	3
MANGT 466	Management Information Systems	3
MANGT 596	Business, Government & Society	3
MANGT 695	Business Strategy	3
MKTG 400	Marketing	3
STAT 351	Business & Economics Statistics II	3

Eighteen credit hours 18
to be taken from courses offered by the College of Business Administration and distributed as follows:

Twelve of the 18 hours must be selected from among the required courses in the finance, management, or marketing majors representing at least three of those four major areas.

The remaining six hours must be selected from the business courses listed in either the required or the elective courses listed for those three majors.

Total credit hours of required courses **45**

Unrestricted electives 6
Economics electives (all courses numbered above 120 except 505 and 506) 6
Restricted electives 9

Humanities, natural science, quantitative or social science courses below, qualify for electives, above.

Humanities—all courses in the following areas: art,* music,* philosophy, dance,* theatre,* modern languages, history; all literature courses; and the following courses: ARCH 301, Appreciation of Architecture; ENGL 230, Humanities: Classical Cultures; ENGL 231, Humanities: Medieval & Renaissance; ENGL 233, Humanities: Baroque & Enlightenment; ENGL 234, Humanities: Modern.

*All courses from these areas are acceptable; however, only a maximum of 3 credit hours total from these four areas in participation or artistic skill development courses may be counted in the restricted elective area and applied toward the degree.

Natural science—all courses in biology, chemistry, geology, and physics; plus: DEN 420, Introduction to Alternative Energy Sources; DEN 425, Introduction to Energy & Environmental Technology; GEOG 220, Environmental Geography I; GEOG 221, Environmental Geography II.

DEN courses are listed in the College of Engineering under general engineering.

Social science—all courses in anthropology, political science, psychology, sociology, and history; all courses in economics except those used in major field or additional economics requirements; all courses in geography, except those listed as natural sciences; plus: PDP 510, Man & His Surroundings; BIOL 310, Biology & the Future of Man; FCDEV 230, Introduction to Human Development; FCDEV 350, Family Relationships & Sex Roles; DEN 250, Impact of Engineering Technology on Society.

Total credit hours of elective areas **21**
Total credit hours required (including 60 BAPP) **126**

Undergraduate credit

GENBA 110. Intermediate Typing. (3) I, II. Emphasis on speed and accuracy in typing straight copy and in production of letters, manuscripts, and tabulated reports. Pr.: One unit of high school typing. GENBA-110-0-0514

GENBA 111. Production Typing. (3) I, II. Develop increased speed and accuracy in production typing—legal forms, statistical materials, and letters—within acceptable time limits. Pr.: GENBA 110 or equiv. GENBA-111-0-0514

GENBA 112. Shorthand I. (4) I, II. Beginning course in fundamentals of Gregg Shorthand. Open only to students with no previous shorthand instruction. Pr.: One unit of high school typing. GENBA-112-0-0514

GENBA 210. Office Machines. (3) I, II. Instruction in electronic and 10-key calculators, techniques in machine dictation and transcription, and layout planning and production on duplicating machines. GENBA-210-1-0501

GENBA 212. Intermediate Shorthand. (3) II. Emphasis on writing speed and the introduction of transcription. Pr.: GENBA 110 or conc. enrollment and GENBA 112 or one unit of high school shorthand. GENBA-212-0-0514

GENBA 213. Transcription. (3) I. Advanced shorthand with speeds of 100 to 120 or higher. Setting up business letters in various styles—gaining speed in transcription of letters and manuscripts. Pr.: GENBA 110 and 212 or equiv. GENBA-213-0-0514

GENBA 310. Executive Secretarial Procedures. (3) II. Study of operational and managerial functions top-level secretaries perform. Situations are provided giving practical, meaningful experiences that develop administrative and supervisory skills and functions. Pr.: GENBA 110 or equiv. GENBA-310-0-0514

GENBA 311. Office Management. (3) I, II. On sufficient demand. An examination of the theory and practice of office management. The scope of the course is defined by the five functions of the office manager—organizing, staffing, directing, planning, and controlling. GENBA-311-0-0506

GENBA 391. Administrative Communications. (3) On sufficient demand. Preparation of business communications, reports and correspondence, and analysis of communication systems within an enterprise structure. Pr.: ENGL 120 and SPCH 106. GENBA-391-0-0501

Graduate credit

GENBA 894. Seminar in Business Administration. (3) On sufficient demand. Contemporary issues in business administration, including study of current literature and intensive investigation of various problem areas. Pr.: Fifteen hours of GENBA courses at the 600 level or higher. GENBA-894-0-0501

GENBA 898. Advanced Business Problems. Credit arranged. I, II, S. Intensive investigation of special business problems. Pr.: Twenty-one hours of GENBA courses at the 600 level or higher and sufficient training to complete the desired investigation. GENBA-898-3-0501

GENBA 899. Thesis Research. (Var.) I, II, S. Pr.: Sufficient background to pursue line of research undertaken and consent of instructor. GENBA-899-4-0501

Management

Robert J. Paul,* head of department

Professors Barton-Dobenin,* Deihl, Jones,* Paul,* and Vaden;* Associate Professors Dilts,* Ebadi and Townsend;* Assistant Professors Kim and Riley;* Instructors Castro, Hartman, Innes, and Morrill; Emeritus: Associate Professors Eriksen and Thiessen; Assistant Professor Buzenberg.

An effective manager must have a combination of human and technical skills. The management curriculum is designed to develop these skills. A management major analyzes the way business firms utilize and develop their resources, especially human resources. Studies in the behavioral sciences aspects of management, quantitative management methods, decision sciences, and management information systems are offered. In addition, the student studies the ways in which modern production systems are designed for the effective acquisition and conversion of material resources.

Requirements for major in management

In addition to completing the 60 credit hour Business Administration Pre-Professional Program, management majors must complete the following requirements:

ECON 510	Intermediate Microeconomics	3
FINAN 450	Business Finance	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MANGT 421	Production/Operations Management	3
MANGT 466	Management Information Systems	3
MANGT 520	Organizational Behavior	3
MANGT 521	Quantitative Management	3
MANGT 531	Personnel & Wage Administration	3
MANGT 596	Business, Government & Society	3
MANGT 622	Decision Analysis	3
MANGT 695	Business Strategy	3
MKTG 400	Marketing	3
STAT 351	Business & Economic Statistics II	3
Total credit hours of required courses		42
Management electives (six hours selected from):		6
ACCTG 312	Cost Accounting	3
IE 481	Motion & Time	3
IE 551	Work Design	3
IE 554	Industrial Facilities Layout & Design	3
IE 609	Occupational Safety & Health	3
MANGT 620	Organizational Design	3
MANGT 630	Labor Relations Law	3
MANGT 633	Advanced Personnel	3
MANGT 690	International Management	3
MANGT 691	Business Measurement & Forecasting	3
MANGT 692	Computer Applications in Management	3
MKTG 641	Business Logistics	3
SOCIO 747	Sociology of Work	3
Economics electives (All courses numbered above 120 except 505 and 506)		3
Unrestricted electives		6
Restricted electives		9

Humanities, natural science, quantitative or social science

Humanities electives—select humanities electives from the following departments: English (210, The Uses of Poetry; 220, Fiction into Film; 230, Humanities: Classical Cultures; 231, Humanities: Medieval and Renaissance; 233, Humanities: Baroque and Enlightenment; 234, Humanities: Modern; 310, Introduction to Fiction; 320, Introduction to the Short Story; 340, Introduction to Poetry; 345, Introduction to Drama; 350, Introduction to Shakespeare; 360, British Literature: Medieval and Renaissance; 365, British Literature: Enlightenment to Modern; 370, American Literature: Colonial through Romantic; 375, American Literature: Realists and Moderns; 387, Great Books; 492, Humanities Seminar; 505, Themes in Literature; 510, Literary Kinds; 515, Literature and Society; 520, Literature and Film; 560, American Folklore and Folk Literature; 570, English Bible; 702, The Folk Tale; 751, American Humor and Satire); history (101, Western Civilization: The Rise of Europe; 102, Western Civilization: The Modern Era; 250, Russian Culture and Civilization; 501, Heritage of the Western World; 504, History of Hinduism; 521, History of Christianity; 522, Religion in American History; 552, American Social History; 553, History of American Culture; 565, History and Culture of Greece; 566, History and Culture of Rome; 595, Modern European Culture); modern languages; philosophy.

Natural science electives—select natural science electives from the following areas: biology, chemistry, engineering (DEN 425, Introduction to Energy & Environmental Technology, DEN 420, Introduction to Alternative Energy Sources), geography (GEOG 220, Environmental Geography I, GEOG 221, Environmental Geography II), geology, physics.

Social science electives—select social science electives from the following areas: anthropology, economics (except courses used as economics requirements), geography (except 220, 221), history (except courses listed as humanities), political science, psychology, sociology.

Total credit hours of elective areas	24
Total credit hours required (including 60 BAPP)	126

Undergraduate credit

MANGT 202. Small Business Operations. (3) On sufficient demand. Opportunities in business ownership, principles governing the starting of a small enterprise; importance, status, problems, and management of a small business. Pr.: ECON 110. Not open to students in College of Business Administration. MANGT-202-0-0506

MANGT 390. Business Law I. (3) I, II, S. A study of law as it relates to business including court procedures and systems, contracts, torts, agency and employment law, and business crimes. Pr.: Junior standing. MANGT-390-0-0501

MANGT 392. Business Law II. (3) II. A study of civil law as it affects commercial transactions including corporations, partnerships, property, commercial paper, and secured transactions. Pr.: MANGT 390. MANGT-392-0-0501

MANGT 420. Management Concepts. (3) I, II, S. Managing organizations through fundamental processes of developing plans, structuring work relationships, coordinating effort and activities, directing and motivating subordinates, and controlling. Also includes managerial roles and responsibilities, effective decision making, productivity improvement, and models and theories of human behavior. Pr.: ECON 120, PSYCH 110, SOCIO 211 and junior standing. MANGT-420-0-0506

MANGT 421. Production/Operations Management. (3) I, II, S. Description and analysis of problems related to the output of goods and services, operations planning and control, and systems management. Pr.: MANGT 420, MATH 205 and STAT 351. MANGT-421-0-0506

MANGT 466. Management Information Systems. (3) I, II, S. A comprehensive view of the organization's information requirements and the role of computer information systems in gathering and producing information. Concepts of data resource management, assessing developments in information technology, and information system's impact on organizations. Problems and techniques concerning the development and installation of responsive systems with special attention to managers' use of system's outputs. Case studies and selected applications. Pr.: CMPSC 202, FINAN 450, MANGT 420, and MKTG 400. MANGT-466-0-0702

MANGT 495. Business Internship. (3) S. Eight weeks of business experience between junior and senior years designed to coordinate the interests of students and firms. Pr.: FINAN 450, MANGT 420, MKTG 400, completion of junior year and consent of instructor. MANGT-495-2-0501

MANGT 498. Independent Studies in Management. (Var.) I, II, S. Indepth analysis of special problems in management including study of current literature. Pr.: Senior standing and consent of the instructor and the department head. MANGT-498-2-0506

Undergraduate and graduate credit in minor field

MANGT 520. Organizational Behavior. (3) I, II. Examination of psychological and sociological variables important in understanding individual motivation, group functioning, change, creativity, and leadership in organizations. Pr.: MANGT 420. MANGT-520-0-0501

MANGT 521. Quantitative Management. (3) I, II. Quantitative techniques, models, and the integrative nature of management systems. Includes PERT, CPM, linear programming, and inventory models. Pr.: CMPSC 202, MANGT 420, MATH 205, and STAT 350. MANGT-521-0-0506

MANGT 530. Industrial and Labor Relations. (3) I, II. Basic course in industrial and labor relations. Broad coverage of the institution of collective bargaining and its environment, the goals and operation of labor unions, the impact of unions on management, and labor relations law. Pr.: Junior standing, closed to students with credit in MANGT 631 or 630. MANGT-530-0-0501

MANGT 531. Personnel and Wage Administration. (3) I, II. The personnel program and its operational processes of manpower planning, recruiting, testing, development, and wage administration. Analysis of the personnel department's role in the organization with emphasis on problem solving. Pr.: MANGT 420. MANGT-531-0-0515

MANGT 596. Business, Government and Society. (3) I, II, S. The interrelationships and interactions of business with the social, political and economic institutions. The impact of changes in the external environment on business and the managerial task. Pr.: FINAN 450, MANGT 390, MANGT 420, and MKTG 400. MANGT-596-0-0501

MANGT 620. Organizational Design. (3) II. In even years. An indepth analysis of theories and research in organizational structure and climate. Includes the impact of the strategic environment; organizational size, complexity, volatility and culture; technology; task design and specialization of labor; and organizational change. Pr.: MANGT 520. MANGT-620-0-0501

MANGT 622. Decision Analysis. (3) I, II. Application of decision making models and quantitative techniques to business problems and policy. Pr.: MANGT 521. MANGT-622-0-0501

MANGT 630. Labor Relations Law. (3) I. Detailed examination of the development and current status of labor relations law governing the private sector in interstate commerce. Topics to be discussed include antitrust prosecution of unions, injunctions, unfair labor practices, NCRR policies, employee rights, union rights, employer rights, and contract enforcement. Pr.: Junior standing. MANGT-630-0-0513

MANGT 631. Collective Bargaining. (3) II. Study of the unionized labor market. The goals, strategies and tactics of unions and management will be examined in detail. Other topics include the environment of collective bargaining, contract negotiations, administration, and enforcement. Pr.: MANGT 630 and ECON 120 or MANGT 530. MANGT-631-0-0516

MANGT 632. Industrial Dispute Settlement. (3) I. Detailed examination of rights arbitration, interest arbitration and fact-finding. Case analysis to develop the principles of contract interpretation. Other topics include the relationships between the courts and arbitration, proper disciplinary procedures, arbitrability, arbitration procedures, and the impact of arbitration on collective bargaining. Pr.: MANGT 631 or POLSC 608. MANGT-632-0-0501

MANGT 633. Advanced Personnel Management. (3) I. In odd years. An indepth analysis of selected topics in personnel management and compensation administration including study of current research and literature. Pr.: MANGT 531. MANGT-633-0-0515.

MANGT 639. Advanced Labor Relations. (3) II. Research methods, model building, economics of the unionized labor markets, and the behavioral theory of negotiations will be examined in detail. Pr.: MANGT 631 or ECON 620. MANGT-639-0-0516

MANGT 690. International Management. On sufficient demand. Examination of business decision parameters and strategy in a multi-national context. The influence of cultural, economic, political, and social differences on decision making and the operation of American enterprises in the international environment. Pr.: FINAN 450, MANGT 420, MKTG 400. MANGT-690-0-0513

MANGT 691. Business Measurements and Forecasting. (3) II. Performing the measurement and forecasting functions in the organization, selecting and analyzing organizational and economic data, applying appropriate techniques, and integrating results with formal plans and decisions. Applications and forecast preparation. Pr.: CMPSC 202, MANGT 420, and STAT 351. MANGT-691-0-0501

MANGT 692. Computer Applications in Management. (3) I. A study of computer solutions to business problems and the development of computer models and programs in PERT, inventory control, mathematical programming, simulation, operations data analysis, and information systems. Pr.: CMPSC 202, MANGT 421, and STAT 350. MANGT-692-0-0501

MANGT 695. Business Strategy. (3) I, II, S. An integration of previous courses through the study of problems in policy formulation and implementation. Cases, business simulation and current topics with emphasis on strategic planning. Open only to seniors or graduate students. Pr.: FINAN 450, MANGT 420, and MKTG 400. MANGT-695-0-0501

Graduate credit

MANGT 820. Behavioral Management Theory. (3) II. An in-depth analysis of the development of the behavioral bases of individual and group behavior in business, governmental, educational, and other organizations with emphasis on current research literature and applications. Pr.: MANGT 420. MANGT-820-0-0506

MANGT 866. Advanced Management Information Systems. (3) I. An indepth, analytical treatment of organizing, producing, and using information in complex organizations. Examination of information-management tools and concepts including technological developments, data processing, information system's impact on organizations, and system output implementation. Problems and techniques concerning the development and installation of responsive systems with special attention to managers' use of system's outputs. Pr.: MANGT 466 or CMPSC 202, FINAN 450, MANGT 420, and MKTG 400. MANGT-866-0-0702

MANGT 888. Administrative Strategy. (3) I, S. Thorough case analysis, a study of the functions, responsibilities, and point of view of general management and the problems which affect the total organization's character and success. The formulation and application of administrative strategy; specifically, analysis of interrelationships between the external and internal environments, choice of purpose, molding of organizational character, definition of what needs to be done, and mobilization of resources for goal attainment. Pr.: FINAN 850, MANGT 820 and 893, and MKTG 840. MANGT-888-0-0506

MANGT 890. Decision Theory. (3) On sufficient demand. An integration of economic theory and operations research in solving business problems and making decisions with emphasis on model building, information selection and use, reducing uncertainty, and strategy development and optimization. Pr.: ACCTG 211, MANGT 420, MATH 205 and STAT 350. MANGT-890-0-0501

MANGT 891. Legal and Social Environment of Business. (3) I, S. A study of the legal and social foundations of contemporary business; an analysis of public policies toward business; and case discussions of problems in the interaction of business firms with other elements of society. Pr.: Open to graduate students in business administration and accounting and to other graduate students with consent of instructor. MANGT-891-0-0501

MANGT 893. Business Operations Analysis. (3) II. The application of management science methods to business problems to provide a basis for rational decision making. Includes mathematical programming, inventory theory, simulation, model building, and heuristics. Pr.: MANGT 420, MATH 205, and STAT 350. MANGT-893-0-0501

MANGT 898. Special Problems in Management. (Var.) As scheduled. An indepth study of specified topics. Pr.: Twelve hours of management and consent of the instructor and department head. MANGT-898-0-0501

Marketing

Terrence V. O'Brien,* head of department

Professors Coleman* Norvell,* and O'Brien;* Assistant Professors Andrus and Sullivan; Instructors Ahern and Chen; Emeritus: Associate Professor Mulanax.

Study in marketing covers such areas as the consumer, the seller, marketing strategy, marketing research, and marketing decisions. The Department of Marketing offers an undergraduate degree program as well as graduate work in the Master of Business Administration (MBA) degree. Undergraduate dual degree and dual major programs, combining marketing with other fields, may be arranged by consulting the marketing department office. Extracurricular activities are available through the Marketing Club (for all students), Pi Sigma Epsilon (sales management), and Alpha Mu Alpha (national honorary). Each offers continuing social and professional functions involving practicing marketers.

Requirements for major in marketing

In addition to completing the 60 credit hour Business Administration Pre-Professional Program, marketing majors must complete the following requirements:

ECON 520	Intermediate Microeconomics	3
FINAN 450	Business Finance	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MANGT 421	Production/Operations Management	3
MANGT 466	Management Information Systems	3
MANGT 596	Business, Government & Society	3
MANGT 695	Business Strategy	3
MKTG 400	Marketing	3
MKTG 450	Consumer Behavior	3
MKTG 640	Marketing Research	3
MKTG 690	Marketing Strategy	3
STAT 351	Business & Economic Statistics II	3
Total credit hours of required courses		**39**
Marketing electives		**9**
(nine hours from the following courses):		
MANGT 692	Computer Applications in Management	3
MKTG 541	Retailing	3
MKTG 542	Sales Management	3
MKTG 543	Promotional Administration	3
MKTG 544	International Marketing	3
MKTG 545	Marketing Channels	3
MKTG 550	Industrial Marketing	3
MKTG 641	Business Logistics	3
Unrestricted electives		**6**
Restricted electives		**12**
Economics		**3**
(one course from the following):		
ECON 510	Intermediate Macroeconomics	3
ECON 530	Money & Banking	3
ECON 555	Urban & Regional Economics	3
ECON 631	Principles of Transportation	3
ECON 633	International Trade	3
ECON 730	Introduction to Econometrics	3
Humanities, natural, social, quantitative: any courses from the four categories below:		**9**

Humanities—art, history, modern languages, music, philosophy, dance, theatre, all literature courses plus: ARCH 301, Appreciation of Architecture; ENGL 230, Humanities: Classical Cultures; ENGL 231, Humanities: Medieval & Renaissance; ENGL 233, Humanities: Baroque & Enlightenment; ENGL 234, Humanities: Modern; SPCH 235, Introduction to the Art of Film.

Natural science—biology, chemistry, geology, physics, plus: DEN 420, Introduction to Alternative Energy Sources; DEN 425, Introduction to Energy and Environmental Technology; GEOG 220, Environmental Geography I; GEOG 221, Environmental Geography II.

Social science—anthropology, economics, geography (except 220, 420, 470), history, political science, psychology, sociology, plus: BIOL 310, Biology & the Future of Man; DEN 250, Impact of Engineering Technology on Society; FCDEV 230, Introduction to Human Development; FCDEV 350, Family Relationships & Sex Roles; PDP 510, Man & His Surroundings.

Quantitative—CMPSC 3--, STAT 5--, plus: MATH 211, Technical Calculus II; MATH 222, Analytic Geometry & Calculus III.

Total credit hours of elective areas 27
Total credit hours required (including 60 BAPP) 126

Undergraduate credit

MKTG 400. Marketing. (3) I, II, S. A general study of marketing from a social-economic point of view; a study of the institutional organization of the market and the functioning of marketing agencies in the distribution of goods. Pr.: ECON 110 and 120. MKTG-400-0-0509

MKTG 450. Consumer Behavior. (3) I, II, S. Behavioral concepts and theories as they relate to marketing: motivation, learning, belief, attitude, habit, taste, custom, fashion, social class, reference group influence, value, and utility theory. Pr.: MKTG 400 and junior standing. MKTG-450-0-0509

MKTG 498. Independent Study in Marketing. (Var.) I, II, S. Selected topics in marketing. Pr.: Consent of department head. MKTG-498-2-0509

Undergraduate and graduate credit in minor field

MKTG 541. Retailing. (3) I. An introduction to retailing from the management point of view; study of retail policies and organization; the operation of the buying and selling functions, merchandise control, store systems, personnel management, retail accounting, and expense control. Pr.: MKTG 400. MKTG-541-0-0509

MKTG 542. Sales Management. (3) II, S. From the point of view of the manufacturer or wholesaler, a study of management problems relating to sales—including sales programs, product and distribution policies, price policy, management of sales force, sales promotion, and market research. Pr.: MKTG 400 and 450. MKTG-542-0-0509

MKTG 543. Promotional Administration. (3) I. Focuses on decisions made in managing the promotional mix (selling, advertising, sales promotion, publicity, and public relations). Relies on the concepts of economics, behavioral science, and mathematics. Stresses analytical decision-making techniques in dealing with promotional problems. Pr.: MKTG 400 and 450. MKTG-543-0-0509

MKTG 544. International Marketing. (3) II. This course deals with the management of marketing problems arising from various degrees of foreign involvement (exports, licensing, foreign subsidiaries). Emphasis is on the management of marketing functions in a multinational context where the parameters differ from those in domestic marketing. Topics include international economic factors, foreign cultures, nationalism and government influences, and economic development. Pr.: MTKG 400. MKTG-544-0-0509

MKTG 545. Marketing Channels. (3) II, S. Study of the quantitative and qualitative factors involved in selecting, developing, managing, and controlling marketing channels of distribution. Includes decision models from industrial marketers through purchasing units. Pr.: MKTG 400. MKTG-545-0-0509

MKTG 550. Industrial Marketing. (3) I. A study of the nature of the industrial marketplace, concentrating on those aspects that differentiate it from the consumer markets. The major topics are analysis of market needs, market segments, organizational buying behavior, purchasing agent functions and activities, marketing strategy and mix for institutional customers, not-for-profit and services marketing, and buyer/seller relations. Pr.: MKTG 400. MKTG-550-0-0509

Undergraduate and graduate credit

MKTG 640. Marketing Research. (3) I, II, S. Designed to acquaint the students with various marketing research concepts, methods, and techniques; and to develop their ability to evaluate, use, and present research findings. Pr.: STAT 351, CMPSC 200 and lab, and MKTG 400. MKTG-640-0-0509

MKTG 641. Business Logistics. (3) I. Operational analysis of the logistics system including locational analysis, inventory control, production scheduling, and transportation. Utilizes concepts and techniques from economics and operations research to analyze logistics systems. Pr.: MANGT 421, MKTG 400, and IE 372. MKTG-641-0-0509

MKTG 690. Marketing Strategy. (3) I, II, S. Marketing policy formulation and implementation. Emphasis on developing students' ability to analyze and solve marketing problems by integrating knowledge in major marketing areas. Pr.: MKTG 640 or MKTG 550. MKTG-690-0-0509

Graduate credit

MKTG 840. Advanced Marketing Management. (3) II. An analytical approach to the study of marketing problems of business firms and other types of organizations. Attention on the influence of the marketplace and the marketing environment on marketing decision-making; the organization's services, products, and communication strategies; and the organization's systems for planning and controlling its marketing effort. Pr.: Six hours of economics, three hours in marketing, three hours in statistics, and MATH 205 or 220. MKTG-840-0-0509

MKTG 841. Special Topics in Marketing. (3) On sufficient demand Investigation and discussion of a selected advanced topic in marketing. One of the following five topics will be chosen for intensive study: (1) Industrial Marketing Management, (2) Advanced Consumer Behavior, (3) Product Policy, (4) Financial Aspects of Marketing Management, (5) Marketing in the Service Sector. Pr.: MKTG 840 or six hours of marketing. MKTG-841-0-0509

MKTG 892. Research Methods in Business. (3) I. Application of statistical methods of analysis to problems in business. Experimental design, data collection, and methods of analysis are covered. Pr.: STAT 350 and MANGT 420. MKTG-892-0-0509

MKTG 898. Independent Study. (Var.) I, II, S. Selected topics in marketing. Pr.: Consent of department head. MKTG-898-0-0509

College of Education

ABBOTT, JAMES W., Instr. (1983). BA 1956, Drury Col.; MA 1959, Univ. of Mo.; LHD 1980, Concordia Teachers' Col.

ALBRACHT, JAMES J., Assoc. Prof. (1966). BS 1948, MS 1954, Univ. of Neb.; PhD 1966, Mich. St. Univ. (GF)

ALBRACHT, MARY L., Instr. (1983). MA 1950, Univ. of Neb.

ALEXANDER, LOREN R., Assoc. Prof. of Education and Modern Languages (1972). BM 1951, Southwestern Col.; MA 1954, Colo. St. Col. of Educ.; MA 1965, PhD 1972, Mich. St. Univ. (GF)

ALLEN, JOYCE E., Asst. Prof. (1981). BS 1971, MS 1974, 1978, EdD 1982, Univ. of Kan.

ANGLE, DENNIS R., Asst. Prof. (1979). BA 1968, MS 1974, Emporia St. Univ.; PhD 1984, Kan. St. Univ.

APEL, J. DALE, Prof.; Assoc. State Leader, 4-H and Youth (1962). BS 1950, Kan. St. Univ.; MS 1961, The American Univ.; PhD 1966, Univ. of Chicago. (GF)

ASTUTO, TERRY A., Asst. Prof. (1983). BA 1967, Cardinal Stritch Col.; MS 1974, Univ. of Wis.; EdD 1983, Ind. Univ.

AUBRECHT, JUDITH D., Asst. Prof. (1982). BS 1965, Douglass Col. (Rutgers Univ.); MA 1974, PhD 1976, Univ. of Ore.

BAILEY, GERALD D., Prof. (1972). BS 1966, MEd 1969, EdD 1972, Univ. of Neb. (GF)

BAKER, HARRY LEIGH, Prof. of Education Emeritus (1946). AB 1920, LLD 1951, Baker Univ.; BS 1922, Kan. St. Univ.; AM 1928, Univ. of Chicago; PhD 1934, Yale Univ. (GF)

BARTEL, ROY A., Assoc. Prof. and Coord. of Field Experiences (1963). AB 1942, Bethel Col.; MSE 1949, EdD 1959, Univ. of Kan. (GF)

BENTON, STEPHEN L., Asst. Prof. (1983). BA 1977, MA 1980, PhD 1983, Univ. of Neb.

BLOHM, PAUL J., Asst. Prof. (1982). BS 1971, MS 1975, Univ. of Wis., Oshkosh; PhD 1982, Univ. of Wis.-Madison.

BLOOMQUIST, MARGARET CHRISTINE, Dir. of Student Personnel and Services; Instr. (1967). AB 1941, Bethany Col.; MBA 1949, Univ. of Denver.

BOYER, JAMES BUCHANAN, Prof. (1971). BS 1956, Bethune-Cookman Col., Fla.; MEd 1964, Fla. A & M Univ.; PhD 1969, Ohio St. Univ. (GF)

BRADLEY, FRED O., Prof. (1972). BA 1962, Colo. St. Col.; MEd 1970, PhD 1972, Univ. of Wyo. (GF)

BROOKHART, CHARLES EDWARD, Prof. of Education and Music (1975). BM 1949, MM 1950, PhD 1960, Geo. Peabody Col. (GF)

BROWN, ELIZABETH N., Instr. (1980). BS 1971, MS 1973, St. Univ. of N.Y. Buffalo; PhD 1979, Ohio St. Univ.

BURDEN, PAUL R., Asst. Prof. (1980). BS 1970, MS 1973, Buffalo St. Col.; PhD 1979, Ohio St. Univ.

BYARS, JACKSON A., Asst. Prof. (1969). BA 1959, Municipal Univ. of Omaha; MA 1964, Colo. St. Col.; PhD 1970, Univ. of Neb. (GF)

CARPENTER, FRANK R., Assoc. Prof.; Assoc. Dean, College of Agriculture (1961). BS 1948, MS 1951, Kan. St. Univ.; PhD 1967, Univ. of Mo. (GF)

CARTER, PHILLIP D., Asst. Prof. (1980). BS 1962, Central Mo. St. Univ.; MEd 1966, Ed. Spec. 1969, PhD 1976, Univ. of Mo. (GF)

CLEGG, VICTORIA LOUISE, Asst. Prof. (1982). BS 1965, Kan. St. Univ.; MA 1972, Wichita St. Univ.; PhD 1979, Kan. St. Univ.

CODIANNI, ANTHONY V., Instr. (1979). BS 1968, Millersville St. Col.; MS 1964, Temple Univ.; MS 1970, Brooklyn Col.

COLWELL, CLYDE G., Asst. Prof. (1979). BS 1968, Millersville St. Col.; MS 1974, Temple Univ.; PhD 1979, W. Va. Univ. (GF)

CRAIG, M. DOROTHY, Asst. Prof. of Education Emerita (1959). BS 1931, Bethany Col.; BS 1941, Emporia St. Univ.; MA 1944, Columbia Univ.

CUNNINGHAM, STEPHEN G., Asst. Prof. (1980). BS 1972, Ind. St. Univ.; MS 1976, Ind. Univ.; PhD 1982, Ohio St. Univ.

DANSKIN, DAVID G., Prof. of Psychology and Education, Center for Student Development (1959). AB 1950, Univ. of Redlands; MA 1951, PhD 1954, Ohio St. Univ. (GF)

DAVIDSON-CREWS, ESTELLE H., Instr. (1983). MA 1981, Kan. St. Univ.

DE MAND, JOHN WESLEY, Prof. (1940). AB 1937, Univ. of Kan.; MS 1940, Kan. St. Univ.; EdD 1953, Univ. of Colo. (GF)

DETTMER, PEGGY A., Asst. Prof. (1979). BME 1958, Pittsburg St. Univ.; MS 1976, PhD 1979, Kan St. Univ. (GF)

DIXON, LYLE, Prof. of Mathematics (1963). BS 1948, MS 1950, Okla. St. Univ.; PhD 1963, Univ. of Kan. (GF)

DYCK, NORMA J., Assoc. Prof. (1976). BA 1957, Bethany Col.; MS 1970, EdD 1972, Univ. of Kan. (GF)

ENDER, STEVE, Asst. Prof. (1982). BS 1973, Va. Commonwealth Univ.; MEd 1976, EdD 1982, Univ. of Ga.

ENOCHS, LARRY G., Asst. Prof. (1983). BA 1967, Ind. Univ.; MA 1971, Univ. of Rochester; EdD 1982, Ind. Univ.

EYESTONE, CECIL L., Assoc. Prof. (1984). BA 1944, Kan. St. Univ.; MA 1958, Colo. St. Univ.

FIELD, RALPH G., Prof. and Head, Dept. of Adult and Occupational Education (1972). BS 1950, MS 1966, Kan. St. Univ.; PhD 1970, Purdue Univ. (GF)

FRANK, BERNARD M., Asst. Prof. (1980). BA 1973, City Col. of N.Y.; MS 1974, PhD 1979, Purdue Univ. (GF)

FREEMAN, VERA, Asst. Prof. (1984). BA 1958, Univ. of Mo.-Columbia; MA 1971, Univ. of Mo.-KC; PhD 1980, Univ. of Mo.-Columbia.

GOODENOW, PHILLIP E., Asst. Instr. (1967). BA 1953, Kan. Wesleyan, Salina.

GOODMAN, DEBORAH L., Asst. Prof. (1984). BA 1969, Augusta Col.; MEd 1970, Univ. of Ill.; PhD 1983, Kan. St. Univ.

GOODYEAR, RODNEY K., Assoc. Prof. (1976). AB 1969, Augustana Col.; EdM 1970, PhD 1972, Univ. of Ill. (GF)

GRAY, ELIZABETH H., Instr. (1980). BS 1976, MS 1981, Univ. of Tex. at Austin.

GREEN, FINIS McGRADY, Prof. of Education Emeritus (1948). BS 1922, Pittsburg St. Univ.; MS 1929, Univ. of Kan.; EdD 1949, Univ. of Colo. (GF)

GRIFFITH, MARY EVAN, Assoc. Prof. (1969). BS 1950, Kan. St. Univ.; MS 1957, Iowa St. Univ.; PhD 1966, Ohio St. Univ. (GF)

HACHMEISTER, MARVIN H., (1979). BS 1956, MS 1961, Kan. St. Univ.

HALL, LAWRENCE FENOR, Assoc. Prof. of Education Emeritus (1926). BS 1923, MS 1927, Kan. St. Univ. (GF)

HAMMEL, MARY L., Asst. Instr. (1981). BFA 1980, Kan. St. Univ.

HANKINS, JENNIFER A., Asst. Instr. (1983). BA 1979, Baylor Univ.

HANNA, GERALD, Prof. (1967). AB 1956, MA 1959, Long Beach St. Col.; EdD 1965, Univ. of Southern Calif. (GF)

HARRIS, MARY McDONNELL, Assoc. Prof. and Head, Department of Curriculum and Instruction (1974). AB 1967, Goucher Col., Md.; EdM 1969, Shippensburg St. Col., Pa.; PhD 1975, Univ. of Pittsburgh. (GF)

HAUSE, RICHARD G., Prof. (1966). AB 1954, MA 1955, Colo. St. Col.; EdD 1966, Univ. of Colo. (GF)

HAUSMANN, EVELYN L., Assoc. Prof. (1976). BS 1961, Lindenwood Col.; MEd 1965, St. Louis Univ.; PhD 1976, Univ. of Mo. (GF)

HEERMAN, CHARLES, Assoc. Prof. (1975). BA 1966, MS 1970, EdD 1974, Okla. St. Univ. (GF)

HOFFMAN, RON J., Instr.; Dir. of Instructional Media Center. AB 1960, Univ. of Mich.; MA 1967, MS 1974, EdS 1975, Ind. Univ.

HOLEN, MICHAEL C., Assoc. Dean and Prof. (1971). BA 1967, Stanford Univ.; MA 1968, PhD 1971, Univ. of Ore. (GF)

HONEYMAN, DAVID S., Asst. Prof. (1983). BS 1961, MS 1964, Okla. St. Univ.; PhD 1983, Univ. of Va.

HORN, JERRY G., Assoc. Dean and Prof. (1977). BS 1961, MS 1964, Okla. St. Univ.; EdD 1970, Univ. of Colo. (GF)

HORTIN, JOHN A., Asst. Prof. (1980). BS 1967, MS 1968, Eastern Ill. Univ.; PhD 1980, Northern Ill. Univ. (GF)

HOYT, DONALD P., Dir. of Office of Educational Research and Prof. (1968). BS 1948, Univ. of Ill.; MA 1950, PhD 1954, Univ. of Minn. (GF)

JANKOVICH, ANN G., Instr. (1982). BS 1953, Ind. Univ.; MS 1981, Kan. St. Univ.

JOHNSON, ROBERT L., Prof. and Asst. Dir., Personnel Services (Extension) (1965). BS 1951, Univ. of Neb.; MS 1956, PhD 1958, Univ. of Wis. (GF)

JORNS, WILLIAM J., Asst. Prof. and Asst. Dir., International Agricultural Programs (1971). BS 1954, MS 1960, Kan. St. Univ.; EdD 1971, N.C. St. Univ.

KAISER, HERBERT EMIL, Assoc. Prof. Emeritus (1961). BS 1941, Concordia Teachers Col.; MS 1943, Okla. St. Univ.; PhD 1959, Univ. of Neb. (GF)

KEYS, SAMUEL R., Prof. (1969). AB 1948, Olivet Col., Kankakee, Ill.; MA 1949, Univ. of Mo., K.C.; PhD 1959, Univ. of Minn. (GF)

KIEFER, NANCY F., Asst. Instr. (1983). BA 1973, Wash. Univ.; MS 1983, Kan. St. Univ.

KIEWRA, KENNETH A., Asst. Prof. (1982). BA 1977, New York St. Univ. Col. at Oneonta; PhD 1982, Fla. St. Univ.

KULP, VLASTA, Asst. Instr. (1983). MA 1952, Univ. of Chicago.

KURTZ, VERNON RAY, Prof. (1970). BS 1955, MS 1959, Ft. Hays St. Univ.; EdD 1967, Univ. of Neb. (GF)

LEASURE, DAVID E., Asst. Instr. (1981). BA 1981, Kan. St. Univ.

LEONARD, JAMES R., Asst. Prof. (1979). EdD 1978, Univ. of Tenn.

LITTRELL, J. HARVEY, Prof. Emeritus (1954). BA 1935, Iowa St. Teachers Col.; MA 1939, St. Univ. of Iowa; EdD 1950, Univ. of Mo. (GF)

LITZ, CHARLES E., Prof. (1971). BA 1963, Ohio Univ.; MA 1967, PhD 1970, Univ. of Mich. (GF)

LOEB, JOE HENRY, Asst. Prof. Emeritus (1956). BA 1948, Northeastern St. Col.; MS 1951, Pittsburg St. Univ.; EdD 1957, Univ. of Ark. (GF)

LUTHI, JOHN F., Instr. (1978). BS 1958, MS 1966, Emporia St. Univ.

LYNCH, MICHAEL L., Assoc. Prof., Center for Student Development (1972). BS 1967, MS 1968, EdD 1972, Ind. Univ. (GF)

MANGANO, NANCY G., Asst. Prof. (1982). BS 1973, Univ. of Texas, Austin; MEd 1978, PhD 1982, Texas A&M Univ.

McANARNEY, HARRY EDWARD, Assoc. Prof. (1957). BS 1943, Emporia St. Univ.; MS 1947, EdD 1958, Univ. of Kan. (GF)

McCAIN, JAMES ALLEN, President Emeritus (1950). Prof. of Higher Education (1970). AB 1926, LLD 1951, Wofford Col.; MA 1929, Duke Univ.; EdD 1948, Stanford Univ.; LLD 1965, Mont. St. Univ.; LLD 1965, Colo. St. Univ.; DSc 1967, Andhra Pradesh St. Univ., India. (GF)

McKINNEY, KATHERYN ANN, Assoc. Prof. of Physical Education, Dance and Leisure Studies Emerita (1946). BS 1934, Kan. St. Univ.; MA 1935, George Peabody Col. for Teachers.

MEISNER, ROBERT G., Prof. (1969). BS 1948, Okla. A & M Col.; MS 1957, Okla. St. Univ.; EdD 1967, Univ. of Calif., Berkeley. (GF)

MILLER, SUSAN E., Asst. Prof. of Physical Education, Dance and Leisure Studies (1978); BA 1962, MS 1964, Univ. of Wash., PhD 1978, Mich. St. Univ.

MIXER, VIRGINIA K., Instr. (1975). BS Ed. 1969, Pittsburg St. Univ.; MS 1975, Kan. St. Univ.

NEELY, MARGERY A., Prof. (1974). AB 1955, Southwest Mo. St. Univ.; MEd 1968, PhD 1971, Univ. of Mo., Columbia. (GF)

NELSON, WILLARD J., Instr. (1971). AA 1952, Luther Jr. Col.; BA 1954, Bethany Col.; MS 1976, Kan. St. Univ.

NEWHOUSE, BARBARA, Instr., (1974). BS 1967, Western Mich. Univ.; MA 1973, Kan. St. Univ.

NEWHOUSE, ROBERT C., Prof. (1972). BS 1967, MA 1969, Western Mich. Univ.; PhD 1972, Univ. of Ore. (GF)

NEWTON, FRED B., Assoc. Prof. (1980). BA 1965, Muskingum Col. (Ohio); MA 1967, Ohio St. Univ.; PhD 1972, Univ of Mo. - Columbia. (GF)

NOLTING, EARL, Assoc. Prof. of Education and Dir., Center for Student Development (1974). BS 1959, MS 1961, Ind. Univ.; PhD 1967, Univ. of Minn. (GF)

OAKLIEF, CHARLES R., Assoc. Prof. (1974). BS 1959, MS 1962, Ohio St. Univ.; PhD 1970, Wis. St. Univ. and Ohio St. Univ. (GF)

ODOM, MILDRED R., Asst. Prof. (1972). BS 1940, Texas Women's Univ.; MS 1966, Kan. St. Univ.

OHLSEN, ROBERT L., Assoc. Prof. (1976). BA 1952, Ottawa Univ.; ME 1957, Wichita Univ.; EdD 1963, Univ. of Kan. (GF)

OLSON, GEORGE ARTHUR, Prof. of Education Emeritus (1949). AB 1928, AM 1931, Univ. of Kan.; PhD 1953, Northwestern Univ. (GF)

OWENS, RICHARD E., Prof. and Dir., Office of Educational Improvement and Innovation (1964). AB and BS 1949, Northwest Mo. St. Col.; MA 1953, EdD 1964, Univ. of Northern Colo. (GF)

PARISH, THOMAS S., Prof. (1976). BA 1968 Northern Ill. Univ.; MA 1969, Ill. St. Univ.; PhD 1972, Univ. of Ill. (GF)

PARMLEY, JOHN D., Asst. Prof. (1980). BS 1968, MEd 1974, Colo. St. Univ.; PhD 1980, Ohio St. Univ.

PERL, MICHAEL F., Asst. Prof. (1976). BA 1966, St. Mary's Col. (Minn.); MS 1970, Winona St. Col. (Minn.); PhD 1976, Univ. of S.C. (GF)

PICKLE, JUDY, Asst. Prof. (1981). BS 1965, Central Mo. St.; MS 1973, Okla. St. Univ.; PhD 1980, Univ. of Ill.

POOLE, MIRAM PICK, Instr. in Physical Education, Dance and Leisure Studies (1961). BS 1943, Savage School for Phys. Ed. and Columbia Univ.; MA 1945, Columbia Univ.

PRAWL, WARREN L., Prof.; Extension Specialist, Staff Development (1952). BS 1954, Kan. St. Univ.; MS 1958, EdD 1962, Cornell Univ. (GF)

PRICE, FLOYD HAMILTON, Prof. and Asst. Head, Dept. of Curriculum and Instruction (1963). AB 1951, Friends Univ.; MEd 1957, Wichita St. Univ.; EdS 1960, George Peabody Col.; EdD 1965, Univ. of Okla. (GF)

PULS, MARILEE C., Asst. Instr. (1979). BA 1967, Wichita St. Univ.

RANKIN, CHARLES I., Assoc. Prof. (1978). BA 1964, ME 1968, Wichita St. Univ.; PhD 1973, Kan. St. Univ.

RICHMOND, JAYNE E., Asst. Prof. (1982). BA 1978, MEd 1980, EdS 1980, PhD 1982, Univ. of Fla.

ROLAND, JUANITA M., Instr. (1980). MA 1975, Univ. of Kan.

ROWLETT, JANE D., Asst. Prof. (1982). BS 1970, MS 1977, PhD 1981, Kan. St. Univ.

SCHAFER, GREG A., Instr. (1982). BS 1978; MS 1981, Kan. St. Univ.

SCHELL, LEO M., Prof. (1966). AB 1955, Bethany Col.; MS 1962, Univ. of Kan.; PhD 1964, Univ. of Iowa. (GF)

SCHUETTE, CLIFFORD G., Asst. Prof. (1975). AA 1967, Del Mar Com. Col. (Tex.); BBA 1969, Univ. of Tex.; MS 1973, EdD 1975, East Tex. St. Univ.

SHOOP, ROBERT J., Assoc. Prof. (1976). BA 1968, MDiv 1972, Wittenberg Univ.; PhD 1974, Univ. of Mich. (GF)

SINNETT, E. ROBERT, Prof. (1962). BA 1948, Univ. of Iowa; MA 1950, PhD 1953, Univ. of Mich. (GF)

SMETHERS, HOWARD DEWIGHT, Asst. Prof. of Education Emeritus (1947). BS 1927, Emporia St. Univ.; MS 1935, Kan. St. Univ.

SMITH, NANCY J., Asst. Prof. (1978). AA 1969, Enterprise St. Jr. Col.; BA 1970, Univ. of W. Fla.; MEd 1974, PhD 1977, Univ. of Ga. (GF)

STEFFEN, JOHN D., Assoc. Prof. and Head, Dept. of Administration and Foundations (1976). BA 1956, Hamline Univ.; PhD 1968, Univ. of Minn. (GF)

STEWART, G. KENT, Assoc. Prof. (1973). BS 1955, Ind. St. Univ.; MEd 1958, Univ. of Ill.; EdD 1964, Ind. Univ. (GF)

STONE, PAUL R., Asst. Instr. (1982). BA 1981, Kan. St. Univ.

STURR, EDWARD, Asst. Prof. of Education and Art (1974). BA 1959, St. Ambrose Col.; MS 1964, Ill. Inst. of Tech.; EdD 1973, Ill. St. Univ. (GF)

TAYLOR, PAUL G., Assoc. Prof. (1983). BS 1959, Rider Col.; MS 1966, Univ. of Bridgeport; PhD 1971, Univ. of Conn.

TERRASS, JOYCE J., Prof. (1973). BS 1942, Kan. St. Univ.; MS 1957, Colo. St. Univ.; PhD 1969, Purdue Univ. (GF)

TREADWAY, KATHRYN, Asst. Prof. (1975). BS 1971, MS 1973, EdD 1975, Okla. St. Univ.

TRENNEPOHL, HARLAN JEAN, Assoc. Prof. (1956). BS 1947, MS 1951, Emporia St. Univ.; EdD 1956, Univ. of Colo. (GF)

UTSEY, JORDAN, Prof. and Dean of College of Education (1969). BA 1952, Col. of Idaho; MEd 1958, EdD 1963, Univ. of Ore. (GF)

VALLANCE, ELIZABETH J., Asst. Prof. and Dir. of Academic Outreach and Summer School (1977). BA 1968, Univ. of Mich.; MA 1973, PhD 1975, Stanford Univ. (GF)

WAUTHIER, RAYMOND AUGUST, Assoc. Prof. of Physical Education (1949). BS 1945, Albion Col.; MS 1947, Drake Univ. (GF)

WEIMER, RITA J., Asst. Prof. (1966). BS 1956, Pittsburg St. Univ.; MS 1964, EdD 1974, Univ. of Kan. (GF)

WELTON, RICHARD F., Prof. (1977). BS 1959, MS 1966, Colo. St. Univ.; PhD 1971, Ohio St. Univ. (GF)

WHITE, WARREN J., Asst. Prof. (1981). BS 1973, Fort Hays St. Univ.; MS 1977, PhD 1980, Univ. of Kan. (GF)

WHITESIDE, HAROLD C., Asst. Prof. (1982). BS 1966, MS 1969, Univ. of Fla.-Gainesville; EdD 1982, Ind. Univ.

WILBUR, GRETCHEN, Asst. Prof. (1982). PhD 1980, Peabody Col.

WILSON, ALFRED P., Prof. (1972). BS 1961, MEd 1965, EdD 1969, Utah St. Univ. (GF)

WISSMAN, JANICE R., Asst. Prof. (1968). BS 1963, MS 1968, Kan. St. Univ.; EdD 1981, Univ. of Kan.

ZABEL, MARY KAY, Asst. Prof. (1979). BA 1969, Grinnell Col.; MAT 1971, National Col. of Ed.; PhD 1977, Univ. of Minn. (GF)

ZABEL, ROBERT, Assoc. Prof. (1977). BA 1969, Grinnell Col.; MEd 1973, National Col. of Ed.; PhD 1977, Univ. of Minn. (GF)

Education

Jordan B. Utsey, dean
Michael C. Holen, associate dean
Jerry G. Horn, associate dean
Margaret C. Bloomquist, director, student personnel services
Willard J. Nelson, director, pre-education advisement center
Michael F. Perl, coordinator of laboratory experiences
Candace Hayden, certification officer, teacher education

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The College of Education is concerned with programs preparing individuals for the broad spectrum of educational positions.

Primary consideration is given to preparing education students for the various positions in elementary, secondary, occupational, and vocational programs, and the personnel who support these programs. In addition, the college provides consultative services and in-service training for the improvement of various aspects of education programs at all levels.

The College of Education cooperates with all other colleges and departments at KSU in its interdisciplinary approach to the preparation of teachers and other educational personnel.

The KSU undergraduate teacher education programs and the master of science and doctor of philosophy degree programs are accredited by the Kansas Board of Education, North Central Association of Colleges and Secondary Schools, and National Council of Accreditation of Teacher Education.

The College of Education participates in the Intercollegiate programs in Women's Studies and Gerontology, described earlier in this catalog under Academic Programs.

Support facilities

In addition to major instructional and research programs, the College of Education provides service to KSU faculty and students, local schools, and a wide variety of other entities in the state and region. Specific services of the College of Education are provided/coordinated through the following centers.

Center for Extended Services and Studies
The center initiates and responds to requests for in-service programs, curriculum studies, program evaluations, and other studies designed to generally enhance the improvement of education at all levels and environments. The center is staffed and maintained through the assignment of faculty and staff in the College of Education and through contracts with faculty from KSU and other professionals as determined by the nature of the project. Coordination of resources at KSU for educational development is a major responsibility of this service unit.

Center for Rural Education and Small Schools
Activities designed to address the unique needs of rural and small schools in Kansas and the plains states are the major focus of this center. Its basic services as ongoing endeavors are in the areas of: research—to identify unique needs, effective techniques, and decision-making processes; and assistance programs—centered on the development, coordination, and delivery of information and services. Development and maintenance of linkages with local schools and state and federal agencies are important functions of the center. A highly successful annual conference on rural education and small schools has attracted national attention and was initiated by the center and faculty and staff in the College of Education.

Center for Economic Education
With joint support by KSU and many Kansas businesses, the Center for Economic Education has developed and conducted pre- and in-service programs on economic education. Center staff provide consultation seminars, demonstrations, and credit course work for schools and educators interested in improving the competence of their students in economic education. A mini-grant program for teachers, the nationally acclaimed "Stock Market Game," and an extensive materials library (free loan basis) are important functions of the center. From its inception, the center has recognized the importance of the classroom teacher, and most of its programs and activities are designed to help teachers improve the quality and increase the quantity of economics taught in schools and colleges.

Kansas Center for Community Education
The center helps schools and other agencies to: develop closer cooperative relationships; avoid costly duplication of facilities and services; make maximum use of community human and physical resources; provide lifelong learning and enrichment opportunities for all community citizens; increase cooperation to meet economic, social, cultural, recreational, health, educational, and aesthetic needs; develop a process for identifying existing and future needs of the community; and to marshal community resources capable of effecting appropriate change.

The center develops and disseminates basic information about community education. The center's staff is available to help in organizing and implementing programs of community education. The center also is involved in providing in-service seminars, workshops, and institutes. It also serves as a liaison with the national network of institutions and agencies involved in the development of community education.

Instructional Media Center
The Instructional Media Center provides a wide range of services, instructional materials, and audiovisual equipment for faculty and students. Materials of professional quality such as tapes, overhead transparencies, slides, films, and displays are produced for faculty members. Students use the media center to prepare similar materials for use in class projects and in student teaching. Audiovisual equipment of many types is maintained and provided by the center. The instructional materials collection includes films, filmstrips, slides, and tapes used in teacher education.

A video recording studio is provided for use in the production of instructional television recordings. The Instructional Media Center also includes an outstanding audio recording studio. These studios accommodate production and reproduction of a wide variety of audio and video recorded teaching and individual study materials.

Facilities are available for group and individual uses of instructional media. Rooms are provided for group viewing of films and video tapes. An independent development laboratory is provided for the use of instructional materials on an individual basis. The laboratory includes learning spaces which are provided with all materials and equipment needed for totally individualized instruction.

A computer-based instruction program is also being developed that will enable students to have a wider range of one-on-one learning experiences.

Honors program
The honors program in the College of Education, more fully described earlier in this catalog under Academic Programs, has been established for those undergraduate students who have demonstrated high academic achievement. The major purpose of the honors program is to give selected students an opportunity to expand their knowledge of the teaching profession and to acquire a desire to be leaders in the profession. The program is designed for students in the College of Education and other students who are completing a teacher certification program through another college at Kansas State University.

Participants may expect to:
receive recognition of academic ability and achievements;

have an opportunity to learn and interact with other honor students in small groups;

establish close association with faculty members in seminars and research projects;

have the opportunity to exercise creativity and explore leadership responsibilities; and

have alternatives to selected required courses in the professional education component.

Admission requirements. Admission to the honors program in education will be granted after the student:
Presents a written statement of interest in the program;

completes the non-credit course, DED 010, Introduction to the Honors Program;

has a satisfactory interview with a faculty member of the Honors Program Coordinating Committee;

attains a cumulative grade point average of at least 3.5 in a minimum of nine semester hours of college work.

Student progression after admission
1. Formal admission to the honors program by the Coordinating Committee.

2. Enroll each semester in DED 020: Honors Program (0).

3. Enroll in a special section of EDAF 315, Educational Psychology II (3) designated for honors students.

4. Enroll in a minimum of two Honors Seminars (DED 320) prior to graduating.

5. Maintain a grade point average of 3.5 or better in all college work.

6. Complete **DED 420: Honors Research** (1-3) under the supervision of a professor in the College of Education.

Features of the program. Honors seminars are offered each semester. Students will be encouraged to enroll in one seminar each semester although the minimum requirement for the program is a total of two honors seminars. One of the required seminars may be taken in another college of KSU. The seminars will be focused on topics which will broaden the knowledge of future teachers and give them insights into leadership responsibilities in their professions.

Honors Research gives the students an opportunity to work with professors having similar research interests. Research topics may be selected from a wide range of areas and they may reflect the student's particular area(s) of interest.

Interruption of degree
The following College of Education policy regarding interruption of academic programs applies to all persons seeking teacher education certification as well as those enrolled in degree programs in the College of Education.

Students who graduate within six years from the time they enter KSU without having previously earned credit from another institution shall have the opportunity to graduate under the academic program (course and total credit requirements) in existence at the time of entrance, unless the student cannot be certified by the state of Kansas under the original entry requirements.

Students who interrupt their programs but do complete the degree or teacher education program within the six-year period shall be required to modify the entry program if the Kansas Department of Education has made changes in Kansas teaching certification requirements.

If more than six years have elapsed since original entry the student will need to complete the degree or teacher education program requirements in existence at the time the student reenters the University for the final and uninterrupted phase of the program.

This policy applies to students who are admitted to the University with previously attained credit as follows:

less than 30 credits . . . . . 6 years allowed for completion
30 to 59 credits . . . . . 5 years allowed for completion
60 to 89 credits . . . . . 4 years allowed for completion
90 or more credits . . . . . 3 years allowed for completion

Most students who interrupt their educations for military service during peacetime do so by voluntary enlistment. In such a case the above policy would hold. In wartime or national emergency, students with good grade records might be drafted. In these cases, it would be expected that students could graduate under the requirements that existed at the time they originally entered unless certification requirements have changed, whereupon the student must modify the entry program to include the current certification requirements.

Teacher education

Undergraduate study
The College of Education is the designated authority for all KSU teacher certification recommendations to the Kansas Department of Education. All certification programs offered by KSU have been approved by the Kansas Department of Education. In addition, a certification examination administered by the Kansas Department of Education, which would be taken after completion of the program, is being considered. Inquiries about this may be directed to the Office of Student Personnel Services, College of Education, 13 Bluemont Hall, Manhattan, Kansas 66506. The programs are designed to develop competencies essential for teaching. Some programs are a part of degree requirements in a college other than the College of Education.

Certification is available for three teaching levels through the teacher education program: early childhood education prepares for pre-school teaching; elementary education prepares for grades K-9; and secondary programs satisfy state certification requirements for grades 7-12.

Admission to teacher education
The application for admission to a teacher education program must be filed when the applicant has satisfied all of the admission requirements. Transfer students who have satisfied all the admission requirements should apply at the time of initial enrollment. Their applications will be evaluated as soon as possible after the students are registered.

A student making a change in teacher education programs must file an application for the new program.

Except for transfer students, the applications will be reviewed as soon as possible after the end of the semester in which the application is filed.

Requirements for admission to teacher education

Effective June 1, 1983

Hours
50 total hours completed including all transfer and KSU credits

English composition
Both English Composition I and II must be completed satisfactorily with a minimum of a C average in both courses. Students may take an English exam if a grade average of C is not achieved.

Oral communication SPCH 105, 106, 108 or 109
A C grade or better is required in one of the oral communication courses. Students may complete the requirement with the quiz out conducted by the speech department.

Overall GPA
Full admission: 2.5 is required in all college work attempted including transfer and KSU credits.
Probationary admission: A student may be admitted with less than a 2.5 GPA attempted in all college work, but must be able to achieve the required 2.5 GPA by the end of the next 30 hours completed or the student will be dropped from teacher education.

Secondary education teaching specialty
A 2.5 GPA is required in all college work attempted in the teaching specialty at other institutions and at KSU.

Basic skills test
A student may be admitted **provisionally** before the test is taken, but the student must take the test the next time it is given on campus or the student will be dropped from teacher education. Tests will be given in a series of days in the early fall and early spring semesters.

Pre-professional laboratory experience
A student must be currently enrolled (if the course has not been completed with a "credit" grade) and completed with a passing grade, or student will be dropped from teacher education. Students enrolled in home economics education, vocational agriculture, early childhood education, or speech clinician programs should contact the advisor concerning the proper course which satisfies this requirement.

Application deadlines
Requirements met by end of summer semester . . . . . October 1
Requirements met by end of fall semester . . . . . February 15
Requirements met by end of spring semester . . . . . June 15

All grade averages are based on all courses attempted at KSU and at all previously attended colleges or universities. An applicant with a cumulative gradepoint average of less than 2.5 may apply for admission on a probationary status, provided all other requirements have been met. Those admitted on a probationary basis must achieve a cumulative grade point

average of 2.5 by the time they have completed the first 30 hours after admission to teacher education, or they will be dropped from the teacher education program.

When the applications are approved, students are notified of their acceptance into the respective teacher education professional program. College of Education students are reassigned from the pre-professional advisor to a professional-level advisor, but the secondary student retains the advisor in the major field. Students who do not meet the requirements will be notified of the options available to them.

Pre-professional lab. The pre-professional lab is designed to give students early contact with the teaching effort of the public school system. There are both learning and observation situations provided for the student. This experience can lead to an earlier commitment to the teaching profession. Students should enroll in DED 100.

Pre-Professional Skills Tests. Students who desire admission to the teacher education programs in the Regents institutions are required to complete Pre-Professional Skills Test to demonstrate high ability levels prior to study in teacher education programs. KSU students must be tested in the reading, mathematical, and writing skills. A minimum score for Regents institutions and KSU will be established during 1984 and 1985. Currently, the cost for the test is $27, which is in addition to the students' regular assessed fees.

The professional semester

The professional semester comprises a series of prescribed courses which are designed so that a minimum of one-half of the semester is allocated to the clinical experience (teaching participation). This semester usually occurs in the fall or spring semester of the senior year. There is no teaching participation experience offered during summer sessions.

Students desiring to be recommended for certification by KSU must earn credit for teaching participation in residence. Those students who have had any secondary methods course in another college or university will be required to audit the equivalent course at KSU.

Students may take no courses which do not conform to the accelerated schedule unless permission is obtained through the office of the coordinator of field experiences. Teaching participation is graded credit/no credit.

Application for student teaching
The application for student teaching must be submitted to the College of Education coordinator of field experiences not later than December 20 of the year preceding the professional semester. Students must submit the application by this deadline date even though all admission requirements to the professional semester are not fully satisfied. Students will receive with the application papers a description of the professional semester options.

The application will be obtained from and returned to the coordinator of field experiences. Junior and senior transfer students from other educational institutions should file the application immediately upon enrollment.

Admission to the professional semester
The coordinator of field experiences will notify applicants of admission to the professional semester. Students will be approved for the professional semester when the requirements listed below have been met. If the student is notified that all requirements for the professional semester have not been satisified, the student may request through the College of Education advisor that his application be postponed for one semester. Only one postponement is permitted without filing a new application for student teaching.

Requirements for all applicants to the professional semester:
Full admittance to a teacher education program.

Completion of 90 semester hours.

An overall grade point average of 2.5 in all course work attempted at KSU and at all previously attended colleges or universities.

Physical examination by the student health center or by a licensed physician. The student verifies to the coordinator of field experiences that the physical examination has been completed.

Additional requirements for secondary majors:
A grade point average of 2.5 in the teaching field based on all teaching field courses attempted at KSU and at all previously attended colleges or universities. Psychology majors must have the 2.5 grade point average in the required second teaching field.

Student teaching assignment request
All student teaching options require a special application called the Student Teaching Assignment Request. This form may be obtained from the office of the coordinator of field experiences and returned to that office by:

September 25 for students participating in the spring professional semester

February 25 for students participating in the fall professional semester

Note: Should either of these dates fall on a Saturday, Sunday, or holiday, the next working day will be considered as the due date.

Professional semester options
Conventional professional semester. This semester involves eight weeks in the classroom on campus and eight weeks in student teaching. Normally, students will commute from Manhattan to student teaching positions, except in the case of vocational agriculture and vocational home economics and when students choose to live off campus.

The MITEC option. There are Multi-Institutional Teacher Education Centers located in Topeka, Kansas City, and Emporia. The Kansas City center includes both Kansas City, Kansas, and Shawnee Mission. This is a voluntary, full-semester, off-campus option. This professional semester option requires advanced planning with the education advisor or the coordinator of field experiences. Students must make special request for this program.

The CUTE option. The Cooperative Urban Teacher Education option is in an urban educational setting in Kansas City in which the students spend a full semester off campus. A limited number of students is selected by application for this option.

The competency-based KSU teacher education option. Selected secondary education majors are involved with a professional semester which focuses on the development of specific teacher competencies, the implementation of those competencies in the classroom where they will student teach, and early participation in those classrooms. The schedule is flexible and a basic objective of the option is to provide alternative ways of developing competencies.

Approved Programs

All students preparing to be certified to teach in pre-school, elementary, or secondary schools must fully complete the approved teacher education program regardless of which college awards the degree.

The approved program consists of: general education studies; a major or specialization; and professional education studies.

General education requirements for all programs.

Humanities	minimum requirement 12 hours	
ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
	or	
SPCH 106	Oral Communication IA	3
	Modern language, linguistics, or literature	3-4

Psychology	minimum requirement one course	
PSYCH 110	General Psychology	3

Social sciences . . . . . minimum requirement 9 hours
Psychology not included here. Courses must be selected from: anthropology, economics, geography (excluding GEOG 220 and 221), history, political science, sociology. The total of social sciences and general psychology must be a minimum of 12 semester hours.

Secondary majors
Natural sciences and mathematics . . . . minimum requirement 12 hours
At least one biological science course and at least one physical science course; one laboratory course; and either 3 credits of college-level math (100 or above) offered by the Department of Mathematics, statistics, or a course that requires college level mathematics as a prerequisite.

Elementary majors
Natural sciences . . . . . minimum requirement 12 hours
At least one biological science course and at least one physical science course; one laboratory course.

Mathematics . . . . . minimum requirement 3 hours
Course recommended: MATH 308, Topics in Mathematics for Elementary School Teachers; no mathematics may apply to the natural sciences requirement.

General education electives . . . . . secondary, 14 hours
elementary . . . . . 11 hours

Additional courses of a general nature in the humanities, social sciences, natural sciences, mathematics, statistics and computer science; students are enouraged to include course work in Women's Studies and minority studies from the humanities and/or social sciences.

The minimum total hours required in general education 50

Physical education requirement

PE 101	Concepts in Physical Education	1

College of Education teacher education

Both degrees offered through the College of Education are four-year programs. The curricula in elementary education and in secondary education fulfill program requirements for teacher certification in the state of Kansas.

Pre-professional entry level. For the freshman and sophomore years, or until requirements for admission to teacher education have been satisfied, students in the College of Education will enroll in the appropriate pre-professional curriculum: elementary (EDPPE) or secondary (EDPPS). These students are advised by a College of Education pre-professional advisor in 13 Bluemont Hall. The advisor is available for advising students concerning the courses essential for entry into the teacher education program.

Students transferring to KSU after earning credit at another institution will be enrolled in a pre-professional program until it has been determined that requirements for admission to teacher education have been satisfied. Students attending community colleges are encouraged to plan their degree programs in a four-year sequence. The College of Education invites students to seek advice concerning course selections.

Professional level. All students must file an application for admission to the teacher education program. When a student's application has been approved, the student is admitted to the professional level and assigned to a professional-level advisor.

Elementary education

Bachelor of Science in Elementary Education
Minimum of 126 hours required
Certification K-9

General education requirements:
Outlined in an earlier section—50 hours required in addition to PE 101, Concepts in Physical Education (1).

Professional and specialized courses required
The following course is required for admission to teacher education:

DED 100	Pre-Professional Laboratory Experience	1

Following courses may be taken before student is admitted to the teacher education program.

EDAF 215	Educational Psychology I	3
EDCI 300	Principles of Elementary Education	3
ART 170	Art for Elementary Schools	3
MUSIC 405	Music for Elementary Teachers	3
ENGL 540	Literature for Children	3
FCDEV 352	Concepts of Personal Health	3
	or	
PE 379	Physical Education for Elementary School Teacher	3
EDAF 622	Psychology of Exceptional Children	3
	or	
EDAF 623	Exceptional Child in the Regular Classroom	3

The application for admission to a teacher education program must be filed and approved before the student may enroll in any of the following courses, which must be completed before entry into the professional semester. Refer to an earlier section for specific requirements for admission to teacher education.

EDAF 315	Educational Psychology II	3
EDCI 316	Introduction to Instructional Media	1
EDCI 470	Science for Elementary Schools	3
EDCI 471	Language Arts for Elementary Schools	3
EDCI 472	Social Studies for Elementary Schools	3
EDCI 473	Mathematics for Elementary Schools	3
EDCI 474	Elementary School Reading	3

Professional semester: see earlier information for specifie prerequisites.

EDCI 585	Teaching Participation in the Elementary School	8
EDCI 600	Reading with Practicum	3
EDAF 611	Educational Sociology	3
Total hours required in professional and specialized courses		55

Area of concentration
The hours selected in the area of concentration are in addition to those taken to meet general education requirements. A 2.5 grade point average is required in all areas for which certification is requested. Guidelines for applicable courses are available in education's Office of Student Personnel Services. Concentrations are offered in the following fields: art, biological science, English, family and child development, general science, health education, mathematics, modern languages, music, physical science, social science, special education (learning disabilities, mental retardation, emotionally disturbed), communication arts, and speech pathology.

Minimum hours required in the area of concentration 15

Electives
Remaining hours in the degree may be taken as additional hours in the major, general education and related courses, and free electives.

Total hours required in electives 5
Total credit hours required for graduation 126

Secondary education

Bachelor of Science
Minimum of 126 hours required
Certification grades 7-12

All students wishing to teach in secondary schools must fully complete the approved teacher education program regardless of which college awards the degree. The approved program consists of: general education studies; professional education studies; and major studies as specifically outlined in the following sections.

Certification on or after September 1, 1985, will require: a course in the teaching of reading; a mathematics course or a course that requires mathematics as a prerequisite; and a pre-professional laboratory experience.

General education requirements:
Outlined in an earlier section—50 hours required in addition to PE 101, Concepts in Physical Education (1).

Majors
The following secondary programs are under review and revision at the time this catalog goes to press. Students are urged to contact the Office of Student Personnel Services in the College of Education, 13 Bluemont Hall, for current requirements.

Art education (EDART)

Students preparing for K-12 certification must complete ART 170, Art for Elementary Schools, and student teaching on both the elementary and secondary levels.

ART 095	Art Assembly	0
ART 100	Design I	2
ART 190	Drawing I	2
ART 195	Survey of Art History I	3
ART 196	Survey of Art History II	3
ART 200	Design II	2
ART 210	Drawing II	2
ART 220	Water Color I	2
ART 225	Figure Drawing I	2
ART 230	Sculpture I	2
ART 235	Printmaking I	2
ART 245	Oil Painting I	2
ART 265	Ceramics I	2
ART 270	Metalsmithing & Jewelry	2
ART 280	Art Education Seminar	2
ART 545	Twentieth Century Art History I	3
ART 690	Techniques in Teaching Art	2
ART ---	Art electives	4

Additional hours in one of the following specialized art subjects: painting, prints, ceramics, sculpture, art history, metalcrafts and jewelry, graphic design, drawing 6

45

Business education (EDBUS)

GENBA 110	Intermediate Typing	3
GENBA 111	Production Typing	3
GENBA 210	Office Machines	3
ACCTG 211	Financial Accounting	3
ACCTG 221	Managerial Accounting	3
MANGT 390	Business Law I	3
GENBA 310	Executive Secretarial Procedures	3
GENBA 311	Office Management	3
MANGT 392	Business Law II	3
MANGT 420	Management Concepts	3
MKTG 400	Marketing	3
FINAN 450	Business Finance	3
	or	
ECON 530	Money & Banking	3

Option A: Shorthand (minimum six hours)

GENBA 112	Shorthand I	4
GENBA 212	Intermediate Shorthand	3
GENBA 213	Transcription I	3

Option B: Accounting (six additional hours)

ACCTG ---	Accounting	6

Supporting courses required:

ECON 110	Economics I	3
ECON 120	Economics II	3
POLSC 325	United States Politics	3
SOCIO 211	Introduction to Sociology	3
MATH 100	College Algebra	3
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 20-	A language lab	2
FEC ---	Family economics electives (selection must be approved by College of Education advisor).	3

64-65

English (EDENG)

Two of the following four courses:

ENGL 260	British Survey I	3
ENGL 265	British Survey II	3
ENGL 280	American Survey I	3
ENGL 285	American Survey II	3

Required:

ENGL 250	Forms of Literature	3
ENGL 400	Advanced Composition	3
ENGL 530	Modern English Grammar	3
ENGL 545	Literature for Adolescents	3
ENGL 350	Introduction to Shakespeare	3
	or	
ENGL 716	Shakespeare: Comedies & Histories	3
	or	
ENGL 717	Shakespeare: Tragedies & Romances	3
ENGL ---	Literature electives, at 600 level and above	9
ENGL	English electives with the following guidelines:	6

If two American surveys, must take one British course; if two British surveys, must take six hours of American literature.

May include one introduction to genre (ENGL 310, 320, 330, 340, or 350) or third survey course.

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Journalism (EDJOR)

JMC 275	Reporting I	3
JMC 285	Reporting II	3
JMC 330	Editing I	3
JMC 665	Law of Mass Communications	3

Eighteen hours of journalism electives; the following courses are suggested:

JMC 310	Photography I	3
JMC 320	Principles of Advertising	3
JMC 335	Editing II	3
JMC 360	Publications Practice	1-4
JMC 510	Yearbook Editing & Management	2
JMC 555	Advertising Copy & Layout	3
JMC 605	Supervision of School Publications	3
JMC 610	Interpretation of Contemporary Affairs	3
JMC 660	History of Journalism	3
JMC 685	Mass Communications Ethics & Issues	3
		30

Mathematics (EDMTH)

MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
MATH 222	Analytic Geometry & Calculus III	4
MATH 240	Elementary Differential Equations	4

Eighteen hours of mathematics courses numbered 300-799; the following courses are recommended:

MATH 511	Introduction to Algebraic Systems	3
	or	
MATH 512	Introduction to Modern Algebra I	3
MATH 570	History of Mathematics	3
MATH 312	Finite Application of Mathematics	3
MATH 520	Foundations of Analysis	3
MATH 521	The Real Number System	3
MATH 573	Transformation & Vector Geometry	3
MATH 791	Topics in Mathematics for Secondary School Teachers	3

Supporting courses required:

STAT 320	Elements of Statistics	3
	or	
STAT 510	Introductory Probability & Statistics I	3
CMPSC ---	Computer science with language course	3-4
		40-41

It is recommended that a course in physics be included as part of general education.

Modern languages (EDMLA)

French:

30 hours at 200 level or above to include the following:

FREN 211	French III	4
FREN 213	French IV	3
FREN 214	French Conversation IVA	2
FREN 511	Masterpieces of French Literature I	3
FREN 512	Masterpieces of French Literature II	3
FREN 513	French Composition & Conversation	3
FREN 514	French Civilization	3
FREN 719	Advanced Spoken & Written French	3
FREN ---	French electives at 500 and above	6
		30

German:

30 hours at 200 level or above to include the following:

GRMN 221	German III	4
GRMN 223	German IV	3
GRMN 224	German Conversation IVA	2
GRMN 521	Introduction to German Literature I	3
GRMN 522	Introduction to German Literature II	3
GRMN 523	German Composition	3
GRMN 530	German Civilization	3
GRMN 731	Advanced Spoken & Written German	3
GRMN ---	German electives at 500 and above	6
		30

Spanish:

30 hours at 200 level or above to include the following:

SPAN 261	Spanish III	4
SPAN 263	Spanish IV	3
SPAN 264	Elementary Spanish Conversation IVA	2
SPAN 564	Spanish Composition & Grammar	3
SPAN 565	Spanish Civilization	3
	or	
SPAN 566	Hispanic-American Civilization	3
SPAN 571	Advanced Spanish Conversation	2
SPAN ---	Spanish electives at 500 and above	5
SPAN 563	Introduction to the Literature of Spanish America	3
SPAN 567	Introduction to the Literature of Spain	3
		28

Certification to teach elementary school foreign language is an optional extension of secondary school certification. The following may be added to the requirements for secondary modern foreign language certification:

EDCI 585	Teaching Participation in the Elementary School	variable
EDCI 620	Foreign Lanaguage Methods for Elementary Schools (offered spring of even years)	3

Psychology (EDPSY)

PSYCH 110	General Psychology	3
PSYCH 250	Experimental Methods in Psychology	4
PSYCH 520	Life-Span Personality Development	3
PSYCH 535	Social Psychology	3
PSYCH 460	Information Processing & Memory	3
	or	
PSYCH 475	Principles of Learning & Motivation	3
	or	
PSYCH 480	Fundamentals of Perception & Sensation	3
PSYCH ---	Psychology electives (excluding EDAF 215, 315, Educational Psychology I and II)	2

Supporting courses required:

STAT 320	Elements of Statistics	3
	or	
STAT 330	Elementary Statistics for the Social Sciences	3
EDAF 715	Principles of Measurement	3
EDAF 721	Mental Hygiene in the School & Community	3
		27

Completion of a second teaching field based on College of Education requirements.

Speech (EDSPH)

All speech education majors are required to complete 36 hours of speech and theatre courses in addition to SPCH 105, Oral Communication I. The following courses are required:

SPCH 125	Argumentation & Debate	3
SPCH 321	Public Speaking	3
SPCH 330	Introduction to Oral Rhetorical Study	3
SPCH 426	Coaching & Directing Speech Activities	3
SPCH ---	500 level or above in general speech	3
	or	
THTRE ---	500 level or above in Theatre	3
SPCH 526	Persuasion	3
	or	
SPCH 527	Group Discussion Methods	3
THTRE 261	Fundamentals of Acting	3
THTRE 263	Oral Interpretation of Literature	3
THTRE 266	Technical Production 1	3
THTRE 370	Dramatic Structure	3
THTRE 565	Principles of Directing	3
JMC 235	Survey of the Mass Media	3
	or	
SPCH 235	Introduction to the Art of Film	3
		36

Natural science majors

Biological science (EDBSC)

BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
BIOL 555	Microbiology	5
BIOL 303	Ecology of Environmental Problems	3
	or	
BIOL 529	Fundamentals of Ecology	3
	or	
BIOL 631	Ecology	3
ASI 500	Genetics	3
	or	
BIOL 400	Human Genetics	3

Eight hours of biology electives. Many different biology courses may be used but it is strongly suggested that the following courses be considered:

ENTOM 312	General Entomology	2
ENTOM 313	General Entomology Laboratory	1
BIOL 310	Biology & the Future of Man	3
BIOL 440	Cell Biology	3
BIOL 560	Evolutionary Biology	2
BIOL 510	Embryology	3

Chemistry courses required:

CHM 210	Chemistry 1	4
CHM 230	Chemistry II	4
CHM 240	Environmental Chemistry Laboratory	1
CHM 350	General Organic Chemistry	3

Other required courses:

GEOL 512	Earth Science	3
GEOL 130	Elementary Geology Laboratory	1
PHYS 115	Descriptive Physics	4
EDC1 614	Lab Techniques	3
		51

Chemistry (EDCHM)

CHM 210	Chemistry 1	4
CHM 230	Chemistry 11	4
CHM 271	Chemical Analysis	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
CHM 500	Descriptive Physical Chemistry	3
CHM	Chemistry electives	5

Supporting courses required:

BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
EDCI 614	Laboratory Techniques in Teaching Science	3
		53

Additional courses recommended:

MATH 222	Analytic Geometry & Calculus III	4
CHM 799	Problems in Chemistry	variable

It is highly recommended that additional courses be selected to fulfill requirements for an additional teaching area in biology or physics. The course selection should be made in consultation with the science education advisor.

Earth science (EDESC)

GEOL 100	Geology I	3
GEOL 130	Elementary Geology Laboratory	1
GEOL 520	Geomorphology	4
GEOL 502	Mineralogy & Petrology I	4
GEOG 220	Environmental Geography I	4

Supporting courses required:

BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 240	Environmental Chemistry Laboratory	1
MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
PHYS 191	Descriptive Astronomy	3
PHYS 193	Descriptive Meteorology	3
EDCI 614	Laboratory Techniques in Teaching Science	3
		56

Additional courses recommended:

GEOL 503	Mineralogy & Petrology II	4

It is highly recommended that additional courses be selected to fulfill requirements for an additional teaching area in biology, physics or chemistry. The course selection should be made in consultation with the science education advisor.

Physical science (EDPSC)

PHYS 113	General Physics I	4
PHYS 114	General Physics II	4

Six hours physics electives selected from the following:

PHYS 191	Descriptive Astronomy	3
PHYS 193	Descriptive Meteorology	3
PHYS 636	Physical Measurements Instrumentation	4
PHYS 506	Physics Laboratory I	3
PHYS 551	Atomic Physics	3
	or	
PHYS 451	Modern Physics	3

Supporting courses required:

CHM 210	Chemistry I	4
CHM 230	Chemistry 11	4
CHM 240	Environmental Chemistry Laboratory	1
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
GEOL 100	Geology I	3
GEOL 130	Elementary Geology Laboratory	1

GEOL 512	Earth Science	3
BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	4
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
EDCI 614	Laboratory Techniques in Teaching Science	3
		64

Physics (EDPHY)

PHYS 017	Colloquium in Physics	0
PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5
PHYS 506	Physics Laboratory I	3
PHYS 522	Mechanics I	3
PHYS 532	Electricity & Magnetism	3
PHYS 551	Atomic Physics	3
PHYS 636	Physical Measurements Instrumentation	4

Supporting courses required:

BIOL ---	One biology course (selection must be approved by the education advisor)	3-4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 240	Environmental Chemistry Laboratory	1
MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
MATH 222	Analytic Geometry & Calculus III	4
MATH 240	Series & Differential Equations	4
EDCI 614	Laboratory Techniques in Teaching Science	3
		57

Additional courses recommended:

GEOL 512	Earth Science	3
GEOL 130	Elementary Geology Laboratory	1

It is highly recommended that additional courses be selected to fulfill requirements for an additional teaching area in chemistry or mathematics. The course selection should be made in consultation with the science education advisor.

Social science majors

A comprehensive social studies education major is available only as an optional secondary education certification program, which requires certification in a primary teaching area.

Economics (EDEC)*

ECON 110	Economics I	3
ECON 120	Economics II	3
ECON 510	Intermediate Macroeconomics	3
ECON 520	Intermediate Microeconomics	3

Fifteen additional hours of economics courses numbered 500 and above, selected with advice of economics and education advisors.

Supporting courses required:

GEOG 100	World Regional Geography	3
	or	
GEOG 440	Geography of Natural Resources	3
	or	
GEOG 450	Geography of Economic Behavior	3
HIST 251	History of the United States to 1877	3
HIST 252	History of the United States Since 1877	3
MATH 100	College Algebra	3
POLSC 110	Introduction to Political Science	3
SOCIO 211	Introduction to Sociology	3
STAT 350	Business & Economic Statistics I	3
	or	
STAT 330	Elementary Statistics for the Social Sciences	3

One of the following four courses:

ACCTG 211	Financial Accounting	4
MATH 205	General Calculus & Linear Algebra	3
MATH 220	Analytic Geometry & Calculus I	4
STAT 351	Business & Economic Statistics II	3

Social science electives:

	Additional courses in:	
HIST ---	U.S. history	6
	or	
POLSC ---	Political science	9
		42-46

Geography (EDGEO)*

GEOG 100	World Regional Geography	3
	or	
GEOG 200	Man, Space, & the Environment	3
GEOG 220	Environmental Geography I	4
GEOG 221	Environmental Geography II	4
GEOG 440	Geography of Natural Resources	3
GEOG 450	Geography of Economic Behavior	3
GEOG 470	Cartography	3
GEOG ---	Additional geography courses	
	300 level	3
	500 level	3
	700 level	3

Supporting courses required:

HIST 101	Western Civilization: Rise of Europe	3
HIST 102	Western Civilization: Modern Era	3
HIST 251	History of the United States to 1877	3
HIST 252	History of the United States Since 1877	3
POLSC 110	Introduction to Political Science	3
SOCIO 211	Introduction to Sociology	3
STAT 330	Elementary Statistics for the Social Sciences	3

Social science electives:

	Additonal courses in:	
HIST ---	U.S. history	6
	or	
POLSC ---	Political science	9
		56-59

History (EDHST)*

HIST 101	Western Civilization: Rise of Europe	3
HIST 102	Western Civilization: Modern Era	3
HIST 251	History of the United States to 1877	3
HIST 252	History of the United States since 1877	3
HIST 397	Junior Seminar	3
HIST 599	Senior Seminar for Secondary Seminar	3

Twelve hours of courses numbered 500 and above distributed in at least three of the following fields: ancient, medieval, and early modern Europe; modern Europe including Britain; third world (Asia, Africa, Latin America); the United States; and history of science, history of technology, military history.

Supporting courses required:

ECON 110	Economics I	3
GEOG 100	World Regional Geography	3
POLSC 110	Introduction to Political Science	3
POLSC ---	Political science elective	3
SOCIO 211	Introduction to Sociology	3
		45

Political science (EDPLS)*

POLSC 110	Introduction to Political Science	3
POLSC ---	Political science courses	18

Supporting courses required:

ECON 110	Economics I	3
GEOG 100	World Regional Geography	3
HIST 101	Western Civilization: Rise of Europe	3
HIST 102	Western Civilization: Modern Era	3
HIST 251	History of the United States to 1877	3
HIST 252	History of the United States since 1877	3
SOCIO 211	Introduction to Sociology	3

Social science electives:

	Additional courses in:	
HIST ---	U.S. history	6
	or	
HIST ---	World history	6
		48

Sociology (EDSOC)*

SOCIO 211	Introduction to Sociology	3
SOCIO 520	Methods of Social Research I	4
SOCIO 511	Comparative Social Theory	3
SOCIO ---	Sociology electives 400 level and above**	9
SOCIO ---	Sociology electives numbered 500-799**	9

Supporting courses required:

ECON 110	Economics I	3
GEOG 100	World Regional Geography	3
HIST 102	Western Civilization: Modern Era	3
HIST 251	History of the United States to 1877	3
HIST 252	History of the United States Since 1877	3
POLSC 110	Introduction to Political Science	3
POLSC ---	Political science elective**	3

Social science electives:

	Additional courses in:	
HIST ---	U.S. history	6
	or	
POLSC ---	Political science	6
		55

*Note: At least 12 hours of U.S. history or 12 hours of political science or 12 hours of world history must be completed prior to student teaching.
**Selected in consultation with education advisor.

Professional education requirements.
The following professional education requirements apply to all secondary education programs listed above.

The following course is required for admission to teacher education:

DED 100	Pre-Professional Laboratory Experience	1

The following course may be taken before student is admitted to the teacher education program;

EDAF 215	Educational Psychology I	3

The application for admission to a teacher education program must be filed and approved bfore the student may enroll in any of the following courses, which must be completed before entry into the professional semester. Refer to an earlier section for specific requirements for admission to teacher education.

EDAF 315*	Educational Psychology II	3
EDCI 316	Introduction to Instructional Media	1
EDAF 622	Psychology of Exceptional Children	3
	or	
EDAF 623	The Exceptional Child in the Regular Classroom	3

Professional semester: See information earlier in this college section for specific prerequisites.

EDAF 611	Educational Sociology	3
EDCI 451	Principles of Secondary Education	3
EDCI 476	Secondary Methods	3
EDCI 586	Teaching Participation in the Secondary Schools	8
Total		31

After September 1, 1985, a course in the teaching of reading will be required for certification.

Art majors preparing for K-12 certification must complete ART 170, Art for Elementary Schools, and student teaching on both the elementary and secondary levels.

*Student must be a junior or senior.

Electives
Hours will vary with majors; they will bring the total hours to 126

Optional secondary education certification programs

In addition to the certification programs offered by KSU, optional secondary certification programs are available. Certification in one or more of these optional programs is available to only those students who have successfully completed an approved full certification program in another (first or primary) teaching area. These optional programs allow individuals the opportunity to teach in more than one area. These options lead to full certification in the subject or subject area for grades 7 through 12. A cumulative 2.5 grade point average is required in all courses attempted in the subject or subject area. KSU will recommend an endorsement to the teaching certificate for any additional teaching area when all requirements have been completed, provided all requirements of the approved degree program and the secondary area of certification have also been completed.

Art

ART 100	Design I	2
ART 200	Design II	2
ART 190	Drawing I	2
ART 210	Drawing II	2
ART 235	Printmaking I	2
ART 220	Water Color I	2
ART 245	Painting I	2
ART 230	Sculpture I	2
ART 265	Ceramics I	2
ART 195	Survey of Art History I	3
ART 196	Survey of Art History II	3
ART 545	Twentieth Century Art History I	3

Six additional hours in an area of concentration in one of the following areas: painting, printmaking, sculpture, metals, drawing, graphic design, ceramics 6

ART ---	Art electives (studio or art history)	3
EDCI 476	Methods of Teaching in the Secondary Schools	3
Total hours required		39

Business

GENBA 110	Intermediate Typing	3
GENBA 111	Production Typing	3
ACCTG 211	Financial Accounting	3
ACCTG 221	Managerial Accounting	3
MANGT 390	Business Law I	3
GENBA 210	Office Machines	3
GENBA 311	Office Management	3
ECON 110	Economics I	3

ECON 120	Economics 11	3
EDCI 476	Methods Teaching Business in Secondary School	3

Option A: Secretarial (minimum 9 hours)

Shorthand (minimum 6 hours)		6
GENBA 112	Shorthand	4
GENBA 212	Intermediate Shorthand	3
GENBA 213	Transcription I	3
GENBA 310	Executive Secretarial Procedures	3

Option B: Data processing (7 hours)

CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 20-	Computer language laboratory	2
GENBA 310	Executive Secretarial Procedures	3
Total hours required		37-39

This prepares a student to teach typing, business law, economics, bookkeeping, in addition to the option selected.

English

ENGL 370	American Literature I.	
ENGL 375	American Literature 11	3
	or	
ENGL 280	American Survey I	
ENGL 285	American Survey II	
ENGL 400	Advanced Composition	3
ENGL 530	Modern English Grammar	3
SPCH 106	Oral Communication IA	3
	or	
SPCH 107	Oral Communication IB	3
ENGL	two courses in British literature	6
ENGL 545	Literature for Adolescents	3
ENGL 350	Introduction to Shakespeare	3
EDCI 476	Methods of Teaching English in Secondary School	3
EDCI 715	Reading in the Content Area	3
Total hours required		30

Journalism

JMC 275	Reporting I	3
JMC 285	Reporting II	3
JMC 330	Editing I	3
JMC 665	Law of Mass Communications	3
EDCI 476	Methods of Teaching English/Journalism in the Secondary School	3
Total hours required		15

Health

FN 132	Basic Concepts of Nutrition	3
FCDEV 352	Concepts of Personal Health	3
PE 376	First Aid & CPR	1
FCDEV 465	You & Your Sexuality	3
FCDEV 555	Community Health Programs	3
BIOL 240	Structure & Function of the Human Body	6
PSYCH 202	Drugs & Behavior	2
FEC 110	Consumer Action	2
BIOL 198	Principles of Biology	4
BIOCH 120	Introductory Organic & Biological Chemistry	5
EDCI 325	Safety	3
EDCI 476	Methods of Teaching in Secondary School	3
Total hours required		38

Mathematics

MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
MATH 222	Analytic Geometry & Calculus III	4
MATH 771	Transformation & Vector Geometry	3
MATH 511	Introduction to Algebraic Systems	3
	or	
MATH 512	Introduction to Modern Algebra	3

Six semester hours of electives chosen from the following:

MATH 240	Elementary Differential Equations	4
MATH 570	History of Mathematics	3
MATH 312	Finite Applications of Mathematics	3
MATH 520	Foundations of Analysis	3
MATH 521	The Real Number System	3

Supporting courses required:

STAT 320	Elements of Statistics	3
CMPSC ---	Computer Science with Language Course	3-4
EDCI 476	Methods of Teaching Mathematics in the Secondary School	3
Total hours required		33-34

Supporting courses recommended: a course in physics.

Modern foreign language

French:*

FREN 211	French III	4
FREN 213	French IV	3
FREN 214	French Conversation IVA	2
FREN 511	Masterpieces of French Literature I	3
	or	
FREN 512	Masterpieces of French Literature II	3
FREN 513	French Composition & Conversation	3
FREN 514	French Civilization	3
FREN ---	French electives at 500 or above	6
EDCI 476	Methods of Teaching Foreign Language in the Secondary School	3
Total hours required		27

German:*

GRMN 221	German III	4
GRMN 223	German IV	3
GRMN 224	German Conversation IVA	2
GRMN 521	Introduction to German Literature I	3
	or	
GRMN 522	Introduction to German Literature II	3
GRMN 523	German Composition	3
GRMN 530	German Civilization	3
GRMN ---	German electives at 500 or above	6
EDCI 476	Methods of Teaching Foreign Language in the Secondary School	3
Total hours required		27

Spanish:*

Twenty-four hours in Spanish at 200 level or above, to include:

SPAN 261	Spanish III	4
SPAN 263	Spanish IV	3
SPAN 264	Elementary Spanish Conversation IVA	2
SPAN 564	Spanish Composition & Grammar	3
SPAN 565	Spanish Civilization	3
	or	
SPAN 566	Hispanic-American Civilization	3
SPAN ---	Spanish electives at 500 or above	6
SPAN 563	Spanish-American Masterpieces	3
	or	
SPAN 567	Spanish Masterpieces	3

EDC1 476	Methods of Teaching Foreign Language in the Secondary School	3
Total hours required		27

*Additional requirements for French, German, and Spanish:

EDC1 586	Teaching Participation in the Secondary School. (may be completed in conjunction with the major field)	variable

Modern foreign language elementary school

Certification to teach elementary school foreign language is an optional extension of secondary school certification. The following may be added to the requirements for secondary modern foreign language certification:

EDC1 620	Foreign Language Methods for Elementary Schools (offered spring of even years)	3
EDC1 585	Teaching Participation Elementary School	variable

Secondary instrumental music

MUSIC 172	Styles I, Introduction to Musical Style	3
MUSIC 175	Styles II, Textures of Music	4
MUSIC 176	Styles III, Musical Styles of the Middle Ages & Renaissance	4
MUSIC 214	Styles IV, Musical Styles of the Baroque Period	4
MUSIC ---	Instrument	4
MUSIC ---	Instrumental music organizations (if band, 2 hours Marching and 2 hours regular; if orchestra, 4 hours in orchestra)	4
MUSIC ---	Instrumental techniques & materials	4
MUSIC 417	Conducting	2
MUSIC 514	The Instrumental Program in Secondary Schools	3
Total hours required		32

Secondary vocal/choral music

MUSIC 172	Styles I, Introduction to Musical Style	3
MUSIC 175	Styles II, Textures of Music	4
MUSIC 176	Styles III, Musical Styles of the Middle Ages and Renaissance	4
MUSIC 214	Styles IV, Musical Styles of the Baroque Period	4
MUSIC ---	Piano	2
MUSIC ---	Voice	4
MUSIC ---	Vocal organizations	4
MUSIC 417	Conducting	2
MUSIC 513	The Choral Program in Secondary Schools	3
MUSIC	Instrumental Techniques	2
Total hours required		32

Psychology

PSYCH 110	General Psychology	3
PSYCH 250	Experimental Methods in Psychology	4
PSYCH 520	Life-Span Personality Development	3
PSYCH 535	Social Psychology	3
PSYCH 460	Information Processing & Memory	3
	or	
PSYCH 475	Principles of Learning & Motivation	3
	or	
PSYCH 480	Fundamentals of Perception & Sensation	3

Supporting courses required:

STAT 320	Elements of Statistics	3
	or	
STAT 330	Elementary Statistics for the Social Sciences	3
EDAF 715	Principles of Measurement	3
EDC1 476	Methods of Teaching Social Science in the Secondary School	3
Total hours required		25

Biology

Core:

BIOL 198	Principles of Biology	4
BIOL 201	Organismic Biology	5
BIOL 303	Ecology of Environmental Problems	3
	or	
BIOL 529	Fundamentals of Ecology	3
CHM 110	General Chemistry	5
	or	
CHM 210	Chemistry I	4
EDC1 614	Laboratory Techniques in Teaching Science	3
EDC1 476	Methods of Teaching Science in Secondary School	3

Plus a minimum of six semester hours chosen from the following:

BIOL 310	Biology & the Future of Man	3
ENTOM 312	General Entomology	2
ENTOM 313	General Entomology Laboratory	1
BIOL 430	Population Biology	4
	or	
AS1 500	Genetics	3
BIOL 555	Microbiology	4
Total hours required		28-29

Some other biology department courses may be considered for meeting the above requirements. It is important that they be approved in advance by a science education advisor, however, most biology courses are designed to meet the needs of curricula other than the classical natural sciences and would **not** satisfy the requirements.

Highly recommended, but not required:

CHM 230	Chemistry II	4
PHYS 115	Descriptive Physics	4
GEOL 512	Earth Science	3

Chemistry

CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 240	Environmental Chemistry Laboratory	1
CHM 350	General Organic Chemistry	3
BIOL 198	Principles of Biology	4
PHYS 113	General Physics I	4
	or	
PHYS 115	Descriptive Physics	4
EDC1 614	Laboratory Techniques in Teaching Science	3
EDC1 476	Methods Teaching Science in the Secondary School	3

Plus a minimum of three semester hours chosen from the following:

BIOL 201	Organismic Biology	5
CHM 500	Descriptive Physical Chemistry	3
GEOL 512	Earth Science	3
GEOL 100	Introductory Geology	3
PHYS 114	General Physics II	4
PHYS 191	Descriptive Astronomy	3
PHYS 193	Descriptive Meteorology	3
Total hours required		29

Some other natural science courses may be considered for meeting the above requirements. It is important that they be approved in advance by a science education advisor, however, because most science courses are designed to meet the needs of curricula other than the classical natural sciences and would **not** satisfy the requirements.

Highly recommended, but not required:

MATH 220	Analytic Geometry & Calculus I	4

Earth science or space science

Core:

GEOL 512	Earth Science	3
GEOL 100	Introductory Geology	3
GEOL 130	Elementary Geology Laboratory	1
BIOL 198	Principles of Biology	4
CHM 210	Chemistry I	4
PHYS 113	General Physics I	4
	or	
PHYS 115	Descriptive Physics	4
EDCI 614	Laboratory Techniques in Teaching Science	3
EDCI 476	Methods Teaching (science) in the Secondary School	3

Plus a minimum of two courses chosen from the following:

GEOL 200	Historical Geology	4
GEOL 502	Mineralogy & Petrology I	4
GEOL 520	Geomorphology	4
GEOL 105	Oceanography	3
PHYS 191	Descriptive Astronomy	3
PHYS 193	Descriptive Metcorology	3
Total hours required		31-33

Some other geology or physics courses may be considered for meeting the above requirements. It is important that they be approved in advance by a science education advisor, however, since most science courses are designed for curricula other than the classical natural sciences and would **not** satisfy the requirements.

Highly recommended, but not required:

GEOG 220	Environmental Geography 1	4

General science

Core:

BIOL 198	Principles of Biology	4
CHM 110	General Chemistry	5
	or	
CHM 210	Chemistry I*	4
GEOL 512	Earth Science	3
PHYS 113	General Physics I	4
	or	
PHYS 115	Descriptive Physics	4
EDCI 614	Laboratory Techniques in Teaching Science	3
EDCI 476	Methods Teaching Science in the Secondary School	3
Total hours required in core		21-22

*Required for chemistry and physics options.

The core in addition to one of the following options must total a minimum of 27 semester hours.

Plus one of the following options:

Biology

BIOL 201	Organismic Biology	5
BIOL 303	Ecology of Environmental Problems	3
	or	
BIOL 529	Fundamentals of Ecology	3

Chemistry

CHM 230	Chemistry II	4
CHM 271	Chemical Analysis	4
	or	
CHM 350	General Organic Chemistry **and**	3
CHM 351	General Organic Chemistry Laboratory	2

Physics

PHYS 114	General Physics II	4
PHYS ---	One physics course that has Physics II as a prerequisite.	
PHYS ---	Plus enough physics department credit to total at least 12 semester hours	minimum 4

Earth science

GEOL 100	Introductory Geology	3
GEOL 130	Elementary Geology Laboratory	1

Plus at least two courses selected from the following:

GEOL 105	Oceanography	3
GEOL 200	Historical Geology	4
GEOL 502	Minerology & Petrology	4
GEOL 520	Gcomorphology	3
PHYS 191	Descriptive Astronomy	3
PHYS 193	Descriptive Meteorology	3

Each student seeking sccond field certification recommendation in general science must select from the above any necessary course work required to bring the total natural science credits to 24 semester hours.

Some other natural science courses may be considered for meeting the above requiremcnts. It is important that they be approved in advance by a sciencc education advisor, however, because most science courses are designed to meet the needs of curricula other than the classical natural science and would **not** satisfy the requirements.

Physics

PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
EDCI 614	Laboratory Techniques in Teaching Science	3
PHYS 451	Modern Physics	3
	or	
PHYS 551	Atomic Physics	3
PHYS 191	Descriptive Astronomy	3
	or	
PHYS 193	Descriptive Meteorology	3

Plus a minimum of three semester hours chosen from one of the following:

BIOL 198	Principles of Biology	4
	or	
BIOL 303	Ecology of Environmental Problems	3
	or	
BIOL 310	Biology & the Future of Man	3
MATH 210	Technical Calculus I	3
	or	
MATH 220	Analytic Geometry & Calculus I	4
EDCI 476	Methods of Teaching Science in the Secondary School	3
Total hours required		34-36

Other natural science courses may be considered for meeting the above requirements. It is important that they be approved in advance by a science education advisor, however, because most science courses are designed to meet the needs of curricula other than the classical natural sciences and would **not** satisfy the requirements.

Highly recommended, but not required:

MATH 220	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4

Physical science

PHYS 115	Descriptive Physics	4
CHM 210	Chemistry I	4
BIOL 198	Principles of Biology	4
GEOL 512	Earth Science	3
GEOL 100	Introductory Geology	3
GEOL 130	Elementary Geology Lab	1
MATH 210	Technical Calculus I	3
EDCI 614	Laboratory Techniques in Teaching Science	3
EDCI 476	Methods of Teaching Science in the Secondary School	3
Total required hours		28

Physical education

One course selected from the following:

PE 325	History & Philosophy of Physical Education	3
PE 340	Social & Psychological Dimensions of Physical Education (Pr.: SOCIO 211, 3 cr.)	3

Following courses required:

PE 320	Motor Development & Learning	3
PE 330	Kinesiology (Pr.: BIOL 240-6 cr.; BIOL 198, 4 cr.)	3
PE 335	Physiology of Exercise (Pr.: BIOL 240)	3
PE 561	Adapted Physical Education	3
PE 410	Gymnastics for Secondary Schools	3
PE 415	Team Sports for Secondary Schools	3
PE 420	Rhythms for Secondary Schools	3
PE 425	Individual & Dual Sports for Secondary Schools	3
PE 710	Measurement & Evaluation in Physical Education (Pr.: STAT 320)	3
PE 376	First Aid & CPR	1
EDCI 476	Methods of Teaching Physical Education in the Secondary School	3
Total hours required		34

Note: Students are advised to include in the General Education requirements for the degree the following courses:

SOCIO 211	Introduction to Sociology	3
STAT 320	Elements of Statistics (Pr.: MATH 100)	3
BIOL 198	Principles of Biology	4
BIOL 240	Structure & Function of the Human Body	6

Social science

ECON 110	Economics 1	3
HIST 102	Western Civilization: Modern Era	3
HIST 251	History of the United States to 1877	3
HIST 252	History of the United States Since 1877	3
GEOG 100	World Regional Geography	3
POLSC 110	Introduction to Political Science	3
SOCIO 211	Introduction to Sociology	3
HIST 101	Western Civilization: Rise of Europe	3
POLSC 325	United States Politics	3
HIST 599	Senior Seminar	3
ANTH 200	Introduction to Cultural Anthropology	3
HIST ---	History courses 300 or above	9
POLSC ---	Political Science courses 300 or above	3
	one course in economics or geography or sociology	3
EDCI 476	Methods of Teaching Social Science in the Secondary School	3
Total hours required in core		51

Speech

SPCH 106	Oral Communication IA	3
	or	
SPCH 107	Oral Communication IB	3
SPCH 125	Argumentation and Debate	3
THTRE 160	Introduction to Theatre	3
THTRE 263	Oral Interpretation of Literature	3
	or	
THTRE 763	Reader's Theatre	3
LING 280	Introduction to the Study of Language	3
EDCI 476	Methods of Teaching Speech in the Secondary School	3
Total hours required		21

Driver education

EDCI 325	Safety (offered fall semester only)	3
EDCI 328	Driver & Traffic Safety Education I (offered spring semester only)	3
EDCI 330	Driver & Traffic Safety Education II (offered summer term only)	3
PSYCH 110	General Psychology	3

Electives: The student will elect at least six hours from the following list with at least two areas represented:

Visual education

ART 100	Design I	2
ME 212	Engineering Graphics 1	2
DEN 160	Engineering Concepts	2
PDP 212	Studio for Environmental Design & Graphics	3

Auto mechanics

ME 512	Dynamics	3
ME 533	Machine Design I	3
ME 563	Machine Design II	3

Sociology

SOCIO 211	Introduction to Sociology	3
SOCIO 411	Social Problems	3

Human relations

SPCH 105	Oral Communication I	2
SPCH 322	Introduction to Human Communication	3
FCDEV 272	The Helping Relationship	2-3

Law enforcement

SOCIO 561	Criminology	3
SOCIO 560	Juvenile Delinquency	3

Court procedures

SOCIO 562	Introduction to Corrections	3
POLSC 503	The People & the Courts	3
Total hours required		18

Secondary education programs outside the College of Education

The general education requirements as outlined in an earlier section must be completed by all students expecting to be certified to teach.

Specialization

Specialization to teach the above secondary areas (except business education) is available through the College of Arts and Sciences. Students who choose the arts and sciences option are responsible for satisfying all the requirements for teacher education as well as the degree requirements of the College of Arts and Sciences.

Agricultural education (AED)

Students planning to be agricultural education teachers must complete the approved program in agricultural education. These students will be enrolled in the College of Agriculture and receive the degree bachelor of science. Certification will cover grades 7-12.

Professional education requirement

The following course is required for admission to teacher education:

EDAO 319	Agricultural Education Colloquium	1

The following course may be taken before the student is admitted to teacher education:

EDAF 215	Educational Psychology I	3

The application for admission to a teacher education program must be filed and approved before a student may enroll in any of the following courses, which must be completed before entry into the professional semester. Refer to an earlier section for specific requirements for admission to teacher education.

EDAF 315	Educational Psychology II	3
EDAO 620	Principles & Philosophy of Vocational Education	3
EDCI 316	Introduction to Instructional Media	1
EDAF 622	Psychology of Exceptional Children	3
	or	
EDAF 623	The Exceptional Child in the Regular Classroom	3

Professional semester:
see information earlier for specific prerequisites

EDAO 621	Program Planning	3
EDAO 500	Methods of Teaching Agriculture	2
EDAO 586	Teaching Participation in the Secondary Schools	8
Total		26

After September 1, 1985, a course in the teaching of reading will be required for certification.

Vocational home economics education (HED)

Students planning to be vocational home economics teachers must complete the approved program in vocational home economics education. Students will be enrolled in and receive the Bachelor of Science in Vocational Home Economics Education degree from the College of Home Economics. Completion of this program satisfies state of Kansas program requirements for vocational home economics certification for grades 7-12.

The following course is required for admission to teacher education:

EDAO 501	Field Experience in Home Economics Education	1

The following course may be taken before the student is admitted to teacher education:

EDAF 215	Educational Psychology I	3

The application for admission to a teacher education program must be filed and approved before a student may enroll in any of the following courses, which must be completed before entry into the professional semester. Refer to an earlier section for specific requirements for admission to teacher education.

EDAF 315	Educational Psychology II	3
EDAO 620	Principles & Philosophy of Vocational Education	3
EDAO 550	Methods of Teaching Home Economics	2
EDAO 637	Practica in Home Economics Related Occupations	1-3
EDAF 622	Psychology of Exceptional Children	3
	or	
EDAF 623	The Exceptional Child in the Regular Classroom	3

Professional semester:
see information earlier for specific prerequisites

EDAO 610	Occupational Home Economics Education	2
EDAO 621	Program Planning in Vocational Education	3
EDAO 586	Teaching Participation in the Secondary Schools	8
EDCI 316	Introduction to Instructional Media	1
EDAO 612	Job Analysis	1
EDAO 611	Coordination Techniques	1
Total		31-34

After September 1, 1985, a course in the teaching of reading will be required for certification.

Music education (MUSED)

Students planning to be music education teachers must complete the approved program in music education. These students will be enrolled in the College of Arts and Sciences and receive the degree Bachelor of Music Education. Certification covers grades K-12.

The following course is required for admission to teacher education:

DED 100	Pre-Professional Laboratory Experience	1

The following course may be taken before the student is admitted to teacher education:

EDAF 215	Educational Psychology I	3

The application for admission to a teacher education program must be filed and approved before a student may enroll in any of the following courses, which must be completed before entry into the professional semester. Refer to an earlier section for specific requirements for admission to teacher education.

EDAF 315	Educational Psychology II	3
EDCI 316	Introduction to Instructional Media	1
MUSIC 412	Music in Elementary Schools	3
MUSIC 413	Music in Middle Level Schools	2
MUSIC 513	The Choral Program in Secondary Schools	3
	or	
MUSIC 514	The Instrumental Program in Secondary Schools	3
EDAF 622	Psychology of Exceptional Children	3
	or	
EDAF 623	The Exceptional Child in the Regular Classroom	3

Professional semester:
see information earlier for specific pre-requisites

EDAF 611	Educational Sociology	3
EDCI 451	Principles of Secondary Education	3
EDCI 582	Teaching Participation in Music	12
Total		36

After September 1, 1985, a course in the teaching of reading will be required for certification.

Physical education (PE)

Students planning to be physical education teachers must complete the approved program in physical education. These students will be enrolled in the College of Arts and Sciences and receive the degree bachelor of science.

Elementary (K-9)

The following course is required for admission to teacher education:

DED 100	Pre-Professional Laboratory Experience	1

The following course may be taken before the student is admitted to teacher education:

EDAF 215	Educational Psychology I	3

The application for admission to a teacher education program must be filed and approved before a student may enroll in any of the following courses, which must be completed before entry into the professional semester. Refer to an earlier section for specific requirements for admission to teacher education.

EDCI 300	Principles of Elementary Education	3
EDAF 315	Educational Psychology II	3
EDCI 316	Introduction to Instructional Media	1
EDAF 622	Psychology of Exceptional Children	3
	or	
EDAF 623	The Exceptional Child in the Regular Classroom	3

Professional semester:
see information earlier for specific prerequisites

EDAF 611	Educational Sociology	3
EDCI 469	Physical Education for Elementary Schools	3
EDCI 585	Teaching Participation in the Elementary School	8
Total		27

After September 1, 1985, a course in the teaching of reading will be required for certification.

Secondary (7-12)
The following course is required for admission to teacher education:

DED 100	Pre-Professional Laboratory Experience	1

The following course may be taken before the student is admitted to teacher education:

EDAF 215	Educational Psychology I	3

The application for admission to a teacher education program must be filed and approved before a student may enroll in any of the following courses. Refer to an earlier section for specific requirements for admission to teacher education.

EDAF 315	Educational Psychology II	3
EDCI 316	Introduction to Instructional Media	1
EDAF 622	Psychology of Exceptional Children	3
	or	
EDAF 623	The Exceptional Child in the Regular Classroom	3

Professional semester:
see information earlier for specific prerequisites

EDAF 611	Educational Sociology	3
EDCI 451	Principles of Secondary Education	3
EDCI 476	Secondary Methods	3
EDCI 586	Teaching Participation in the Secondary Schools	8
Total		27

Physical education majors desiring K-12 certification should consult College of Education advisor.

Early childhood education

Bachelor of Science in Family and Child Development Degree
Minimum of 125 hours required
Preschool certification

Students planning to be certified as pre-school teachers must complete the approved program in early childhood education in the College of Home Economics.

The general education requirements as outlined in an earlier section must be completed. Reference should be made to an earlier section for specific requirements for admission to teacher education.

College of Education program not leading to teaching certification

Adult and continuing education

Bachelor of Science
Minimum of 126 hours required

The adult and continuing education program is designed to develop competencies essential to persons working with adults. The adult and continuing education bachelor's degree program is not to be used for vocational certification and does not lead to any other type of certification.

The program in adult and continuing education requires: general education studies; professional education studies; and an area of concentration.

The College of Education is cooperating with Kansas independent colleges to offer students the opportunity to prepare themselves for their chosen occupations through a special dual degree program.

For the freshmen and sophomore years, students are enrolled in the pre-professional curriculum (EDPPA) in the College of Education. These students are advised by the College of Education pre-professional advisor in 013 Bluemont Hall. The advisor is available for advising students concerning the courses essential for entry into the adult and continuing education program.

Admission

Application for admission. All sophomores make application for admission into the adult and continuing education program. The application forms are available in the Office of Student Personnel Services, 13 Bluemont Hall. When students are accepted into the adult and continuing education curriculum (EDAD), they are reassigned from the pre-professional advisor to an adult and continuing education advisor.

Dates. Students must apply by October 1 or February 15 of the sophomore year in the semester in which they earn 53 semester hours. The application for admission to adult and continuing education program must be filed two years prior to graduation.

Transfer students transferring 53 or more hours from another institution should apply at the time of enrollment. Students transferring fewer than 53 hours will be required to complete a semester in residence.

Students making a change in programs should file an application for the new program.

Requirements for admission. An overall grade point average of 2.2 in all resident work attempted at Kansas State University is required.

The grade point average requirements for students transferring to KSU will be based on all work attempted at previously attended institutions only when the application is filed at the time of initial enrollment.

The applicant must pass English Composition I and II. The average of both of these grades must be at least 2.0. Students failing to meet the grade point requirement for English Composition I and II may take a proficiency examination to fulfill the requirement.

The student must earn a grade of C or better in SPCH 105 or 106.

Provisional admission may be granted to an applicant with an overall grade point average not below 2.0 if all other requirements are met.

General education requirements

Humanities ..... minimum requirement 12 hours
Required: ENGL 100 and 120, English Composition I and II (a grade average of C is required in the two courses); a course in oral communication (a minimum grade of C required); and modern languages, linguistics, or literature

Psychology ..... minimum requirement one course
Required: PSYCH 110, General Psychology

Social sciences ..... minimum requirement 9 hours
(Psychology not included here; see general education electives below.)
Required: courses must be selected from anthropology, economics, geography (excluding GEOG 220 and 221), history, political science, sociology. The total of social sciences and general psychology must be a minimum of 12 semester hours.

Natural sciences and
mathematics ..... minimum requirement 12 hours
Required: at least one biological science course, and at least one physical science course; one laboratory course; a maximum of four hours of mathematics may apply, but not substitute for a physical science; mathematics may include statistics or computer science.

General eduation electives ..... 14 hours
Electives must be selected from any area included above and/or general religion, philosophy, art and music history, literature, appreciation of art, music and theatre, and humanities courses.

The minimum total hours required in general education 50

Physical education requirement

PE 101	Concepts in Physical Education	1

Professional education requirements

The following courses may be taken before student is admitted to the adult and continuing education curriculum:

EDAO 680	Introduction to Adult Education	3
Professional education electives		25-28

A student must be admitted to the adult and continuing education curriculum before enrolling in the following three courses:

EDAF 315	Educational Psychology II	3
EDAF 611	Educational Sociology	3
EDAO 633	Practicum in Adult Education	3-6
Total hours required in professional education		40

Area of concentration

The hours selected from the field of concentration are in addition to those taken to meet general education requirements and may not be professional education courses. Concentrations are offered in the following fields: agriculture, art, architecture, business, computer science, economics, English and speech, engineering, family and child development, health education, home economics, humanities, journalism and mass communications, leisure studies, modern languages, music, natural sciences, nursing, psychology, physical education, social sciences, statistics and mathematics, and vocational (skill areas).

Total hours required in area of concentration 15

Electives

Total credit hours required for graduation 126

Professional certification

Initial certification. The College of Education has the responsibility to serve as the recommending agent for all KSU graduates who wish to qualify for certification. The degrees earned in the College of Education in elementary education and in secondary education will fulfill certification program requirements. Pre-school, elementary, and secondary teaching certification may be accomplished through the completion of the approved program and the appropriate degree. Those students who do not apply for the initial certification when they are eligible will be expected to meet the requirements in effect at the time of the initial certification application. Students enrolled in and earning degrees in colleges other than the College of Education must complete all requirements of the teacher education program. In addition, a certification examination administered by the Kansas Department of Education which would be taken after completion of the program is being considered. Inquiries about this may be directed to the Office of Student Personnel Services in the College of Education, 13 Bluemont Hall.

Students may qualify for the three-year degree early childhood certificate, the three-year degree elementary certificate, the three-year degree secondary certificate, or the three-year degree elementary and secondary certificate, as established by the Kansas Board of Education.

Applications for certification are processed by the Office of Student Personnel Services of the College of Education, 13 Bluemont Hall.

Persons seeking initial certification who present degrees from other accredited institutions must meet all requirements of the teacher education program.

Additional certification endorsements. KSU will recommend for certification those individuals who are already certified, but who are adding an endorsement to the certificate (e.g., reading specialist, administrator, counselor, an additional teaching area). KSU may become the recommending agent for individuals presenting degrees from other accredited institutions. These persons must complete eight hours in residence, a portion of which must be earned in the College of Education.

Recertification. The Kansas Board of Education has taken action which has eliminated the parent institution role in recertification. Renewal applications not requesting an additional certification endorsement are sent directly to the Kansas Department of Education.

Certification requiring work beyond the bachelor's degree. The College of Education will recommend for certification individuals satisfying program requirements for the following:

Guidance and counseling. The approved M.S. programs in elementary or secondary guidance and counseling satisfy the state of Kansas certification requirements. Applicants must hold a degree-teaching certificate at the level they plan to counsel and have two years teaching experience or must satisfy these requirements concurrently with the program. A minimum of 12 hours in counseling and student personnel program required courses must be earned at KSU. Three of the 12 hours must include the course EDAF 887, Counseling Practicum.

Speech clinician. The speech pathology-audiology program at KSU has been designed to meet the requirements for certification of clinical competence of the American Speech and Hearing Association and the state of Kansas Department of Education requirements for speech clinician. The approved

program requires the M.S. degree in the College of Arts and Sciences.

Administrator. A graduate degree is required for any administrative certificate granted by the state of Kansas. The program as required by the College of Education must be completed. Eight hours from courses required for the administrator certification must be earned at KSU before the College of Education may recommend for administrative certification. It is recommended that the eight hours include EDAF 889, Practicum in School Administration, if such a practicum has not already been completed. The Department of Administration and Foundations should be contacted regarding advisement for specific administrative certification.

Special education. Students at KSU wishing to prepare as special education teachers may meet all academic requirements for certification as teachers of the gifted, mentally retarded, learning disabled, or those who have personal and social adjustment problems (emotionally disturbed). Each program is considered as being primarily one that leads to a master's degree. At least half of the credits required for special education certification must be earned at KSU, including at least one major area course and one practicum, before the College of Education may recommend for special education certification.

Early childhood handicapped. This endorsement is offered through the cooperative efforts of the Department of Family and Child Development (FCDEV) in the College of Home Economics and the Department of Administration and Foundations (EDAF) in the College of Education. Students are to choose their department affiliation in either FCDEV or EDAF and are assigned an advisor in the department chosen. Early childhood handicapped is a relatively new endorsement area in Kansas.

Reading specialist. Special certification requirements exist for both elementary and secondary school teachers of special reading classes in Kansas. In addition to degree certification and teaching experience, a minimum of 12 semester hours in a planned sequence of graduate reading courses is required. Six of the 12 hours required for certification must be earned at KSU before the College of Education may recommend for the reading specialist endorsement. Three of the 6 hours must be EDCI 847, Clinical Practices in Reading. (A master's degree is not required for certification.) The College of Education offers a variety of courses which meet these requirements.

Community college teaching. A certificate is no longer required to teach in a community college. The College of Education offers a master's degree which includes those courses recommended for students who desire to prepare for community college teaching.

School library media specialist. A certificate for school library media specialists is offered through the Department of Curriculum and Instruction of the College of Education. Twenty-four hours of course work are required in the areas of media program administration, selection and reference, utilization, organization, and development and production of instructional materials. The school library media specialists program exists for elementary and secondary schools. Students entering this program are also able to complete a master's degree in education media and technology with an additional minimum of 6 hours.

Graduate study

The College of Education offers work leading to the master of science degree and the Doctor of Philosophy in Education degree. Admission to the Graduate School is required of all students enrolling for graduate credit. The general requirements for advanced degrees are set forth in the Graduate School section of the catalog.

The College of Education offers numerous off-campus courses throughout the state of Kansas. These courses are offered for those persons who cannot attend classes on campus. Credit toward a graduate degree may be earned through off-campus offerings. Doctoral candidates must meet specific on-campus residency requirements.

Professional certification and renewal. Those students who are primarily interested in graduate study to meet certification and/or renewal of teaching skills and do not wish to seek an advanced degree may apply for admission as a special non-degree student. Admission in this category is consistent with Graduate School standards for special students. Refer to the section entitled Professional Certification.

Master of science degree. Major work leading to the degree master of science is offered in the following fields: agricultural education; home economics education; and education (specialization in: adult and continuing education, elementary administration, secondary administration, guidance and counseling, secondary education, elementary education, special education, and occupational education).

Requirements. Candidates for graduate work shall meet the following admission requirements:

Graduation from an accredited institution whose requirements for the bachelor's degree are substantially equivalent to those of Kansas State University;

undergraduate grade average of 3.0 or better in the junior and senior years;

undergraduate preparation substantially equivalent to that given by KSU in the specific subject-matter field in which the applicant expects to do graduate work;

undergraduate preparation in closely related or supporting subjects adequate to support advanced work in the field of the applicant's choice;

undergraduate professional education necessary to satisfy the requirements of the graduate program the student expects to pursue; and

international students whose native language is not English must make available the results of the Test of English as a Foreign Language (TOEFL). A minimum score of 550 is required on this examination.

Students lacking preparation in certain areas may be required to do additional work.

All students expecting to work for a master's degree shall make available to the office of graduate studies, College of Education, two copies of the graduate school application, two official transcripts from each institution attended, and a statement of academic objectives for graduate study. International students must make available three letters of recommendation. Advisors and/or departments may require additional information.

M.S. degree requirements include:
A minimum of 30 semester hours, approximately one-half of which shall be in the major field;

academic advisors should be consulted regarding specific departmental program requirements.

Thesis, report, non-report options: Departments shall have the option of using one or more of three plans: 1. a thesis of six to eight semester hours; 2. a written report of two semester hours either of research or of problem work on a topic in the major field; or 3. course work only, but including evidence of scholarly effort such as term papers, production of art, music, designs, as determined by the student's supervisory committee.

A final oral examination and/or a comprehensive written examination or both shall be required of the student. These may include a defense of the thesis or report, an interpretation of other scholarly products, or a testing of the student's understanding of the fields of study. Choice of examination procedures shall be a departmental option.

Information on special requirements for an advanced degree may be obtained by writing to the department head.

Doctor of philosophy degree in education. Major work is available in the following broad areas of specialization: administration and foundations education; adult and occupational education; and curriculum and instruction education. Joint programs involving selected departments in other colleges at KSU will prepare individuals for teaching positions in community and four-year colleges.

Requirements. Applicants for admission to the Ph.D. degree program in education shall make available to the office of graduate studies, College of Education, two copies of the graduate school application, two official transcripts for undergraduate and graduate courses, verbal and quantitative scores from the aptitude test of the Graduate Record Examination or the Miller Analogics Test score, and a statement of objectives indicating educational experience and professional goals. International students must make available three letters of recommendation. The major professor and/or the departmental faculty may require additional information.

Additional requirements for the Ph.D. degree include a minimum of 90 semester hours of graduate study beyond the bachelor's degree, and these must include:

A minimum of 24 hours of course work above the master's degree or equivalent, and 30 hours of research at KSU after admission to the doctoral program;

a minimum of 20 hours in the area of specialization, 9-12 hours in an integrated supporting area, and 9 hours in the prescribed research core. The prescribed research core consists of the following: a first course in educational research; EDAF 817 in administration and foundations and EDAF 917. A foreign language is not required.

For the residency requirement of the doctoral program, 24 hours of course work will be completed on the KSU campus within a calendar year;

written preliminary and oral examinations that meet the requirements of the Graduate School and the College of Education.

Beyond the courses specified in the research core, each student's program of study is individualized with the approval of the major professor and the supervisory committee, to optimize on the student's interests, expertise, and professional goals.

A member of the graduate faculty in the student's area of study serves as the major professor. The graduate faculty member must agree in conference with the department head to serve as major professor.

Information on special requirements for an advanced degree may be obtained by writing to a department head.

General courses in education

DED 010. Introduction to the Honors Program. (0) I, II. Direction and goals for the Honors Program in the College of Education. Meets twice during the semester. Pr.: Nine hours of college work completed. DED-010-0-0801

DED 020. Honors Program. (0) I, II, S. All students accepted into the College of Education Honors Program must enroll each semester. Pr.: Sophomore or higher standing, 3.5 cumulative grade-point average, acceptance into the Honors Program. DED-020-0-0801

DED 100. Pre-Professional Laboratory Experiences. (1) I, II. Supervised experiences in the field of education designed to facilitate orientation and investigation of teaching through the teacher aide program. Maximum credit of three (3) hours. No more than one credit per semester. DED-100-2-0808

DED 105. Introduction to Women's Studies. (3)

***DED 315. Introduction to Gerontology.** (3) II. A multidisciplinary introduction to the field of aging. Examines social, psychological, developmental, organizational, and economic aspects of aging. The course focuses upon the later stages of the adult life cycle. Theoretical, methodological, and applied issues of aging will be related to contemporary American society. Pr.: None. DED-315-0-4900

DED 320. Honors Seminar. (1) I, II. Selected topics in Education. May be taken more than once for credit. For students in Honors Program only. DED-320-0-0801

DED 405. Senior Seminar in Women's Studies. (3)

***DED 415. Senior Seminar in Gerontology.** (3) I. Integration of course work in gerontology with an in-depth project in a special interest area. Pr.: Completion of 15 hours of course work in Gerontology Second Major. DED-415-0-4900

DED 420. Honors Research. (1-3) I, II, S. Individual research projects under the supervision of a professor in the College of Education. For students in Honors Program only. Pr.: A minimum of two hours credit in DED 320 or one hour credit in DED 320 and one hour selected from GENAG 310, DAS 399, GNHE 399. DED-420-4-0801

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*035. College of Agriculture; 100. College of Architecture; 200. College of Arts and Sciences; 600. College of Home Economics.

Administration and Foundations

John D. Steffen,* head of department

Professors Bradley,* Danskin,* DeMand,* Hanna,* Holen,* Hoyt,* Keys,* Litz,* McCain,* Neely,* Newhouse,* Parish,* Shoop,* Sinnett,* and Wilson;* Associate Professors Cashin, Dyck,* Frank,* Goodyear,* Lynch,* Newton,* Nolting,* Ohlsen,* Stewart,* and R. Zabel;* Assistant Professors Astuto, Aubrecht, Benton, Clegg, Dettmer,* Honeyman, Kiewra, Livingston,* Richmond, Rowlett, White,* and M.K. Zabel;* Emeriti: Professors Baker,* Green,* and Ohlson;* Associate Professor Kaiser.*

The focus of the department is twofold: to provide the foundations of education at the undergraduate level in special education and educational sociology and psychology; and to offer graduate studies in educational administration, guidance and counseling, educational psychology, special education, and higher education.

The foundations of education include such topics as community education, educational sociology, plus history and philosophy of education. The intent is to bring to bear upon the problems of contemporary education the contributions of the humanities and the behavioral sciences at both the undergraduate and graduate levels.

Studies in special education are intended to accommodate students who wish to specialize in teaching children and youth with certain exceptionalities. Students must complete an undergraduate teacher education program leading to certification for either elementary or secondary school teaching. Program focus is to work with the mentally retarded, learning disabled, gifted, and the emotionally disturbed student at both the elementary and secondary levels. In addition, a close working relationship is maintained with the Department of Speech in the preparation of supporting personnel in the area of speech pathology and hearing conservation.

Graduate studies in counseling and student personnel services are designed to provide emphasis in behavioral sciences, therapeutic intervention into the lives of humans, the organization and administration of helping services, and research.

The study of educational psychology at the graduate level focuses on applications of the behavioral sciences to the educational process. Emphasis is directed toward human growth and development, learning theory, statistics and measurement, and their impact in educational settings. Students in this area typically provide leadership at all levels of education.

The graduate programs in educational administration stress both breadth and depth of content to provide the student ample opportunity to develop essential competencies in the areas of behavioral and managerial sciences, educational planning, educational law, educational finance, and research.

Courses in administration and foundations

Undergraduate credit

EDAF 111. Group Life Seminar. (1) I. Introduction to organized group experience through participation in weekly small group meetings. Study of such questions as effective communication, the function of groups, and human growth through social interaction. Open to selected freshmen and other new students, with consent of instructor. EDAF-111-1-0801

EDAF 211. Leadership Training Seminar. (2) I. General principles of leadership as applied to small groups. Study of the role of the leader, group processes and interaction, defining group goals, and techniques of observation. Workshop and supervision in small group leadership. Pr.: Sophomore standing and consent of instructor. EDAF-211-1-0801

EDAF 215. Educational Psychology I. (3) I, II, S. Physical, intellectual, emotional, social, and personality development from conception to adulthood; understanding of these phases of development and their importance for education essential as background for those desiring to enter the teaching profession. Pr.: PSYCH 110 and sophomore standing. EDAF-215-1-0822

EDAF 311. Interaction and Guidance for the Paraprofessional. (3) I, II. Application of a systematic approach to interaction skills in a paraprofessional helping relationship. Includes background knowledge of listening skills and practicing in emitting skills which influence interaction quality. Pr.: Junior standing.

EDAF 315. Educational Psychology II. (3) I, II, S. The learning process, with special emphasis on abilities and teaching-learning processes, and measurement and evaluation of school learning. Pr.: EDAF 215, Junior standing, and admission to Teacher Education. EDAF-315-1-0822

Undergraduate and graduate credit in minor field

EDAF 511. Independent Study in Education. (1-3) I, II, S. Selected topics in professional education. Maximum of three hours applicable toward degree requirements. Pr.: Consent of department head. EDAF-511-3-0801

Undergraduate and graduate credit

EDAF 611. Educational Sociology. (3) I, II, S. A study to gain an understanding of the ways in which the school can effectively utilize the social process in developing and educating the individual and to show the interrelationships of such institutions as the family, the church, the playgrounds, and the various youth-serving agencies with the school. Pr.: Senior standing. EDAF-611-0-0801

EDAF 620. Stress Management for Teachers, Counselors, and Administrators. (3) I. Systematic training in stress management strategies and techniques for the professional educator and for use in classroom and counseling settings. Includes knowledge of self-directed and instrumental techniques, psychophysiology of stress, issues in stress management, and role of teacher and counselor in delivering stress management training. Pr.: EDAF 315. EDAF-620-1-5-0826

EDAF 622. Psychology of Exceptional Children. (3) I, II, S. Psychological aspects of the superior, the subnormal, the emotionally disturbed, and the physically handicapped child, with attention to early identification and treatment. Pr.: PSYCH 280 or EDAF 215. EDAF-622-1-0808

EDAF 623. The Exceptional Child in the Regular Classroom. (3) On sufficient demand. Designed for regular classroom teachers in meeting the needs of exceptional children. Support strategies for teachers and exceptional children in the mainstream of education will be explored. Pr.: EDAF 215. EDAF-623-9-0808

EDAF 628. Characteristics of the Emotionally Disturbed. (3) I. A survey and exploration of approaches to the educational needs of the socially and emotionally disturbed child. Development of curricula and learning environment will be emphasized. Pr.: EDAF 622 or EDAF 663 and/or consent of instructor. EDAF-628-1-0816

EDAF 631. Characteristics of Learning Disabilities. (3) II. An explanation of important concepts and practices in the area of learning disabilities. Emphasis will be placed upon diagnosis of underlying causes and their characteristics. Pr.: EDAF 622 or EDAF 663. EDAF-631-0-0818

EDAF 632. Remediation Education for the Emotionally Disturbed. (3) On sufficient demand. Educational planning, instructional methods, behavioral management, curricula modification, and use of appropriate media and materials with the emotionally disturbed. Pr.: EDAF 315. EDAF-632-0-0808

EDAF 633. Remediation of Learning Disabilities. (3) On sufficient demand. Educational planning, instructional methods, behavioral management, curricula modifications, and use of appropriate media and materials with the learning disabled. Pr.: EDAF 631. EDAF-633-0-0808

EDAF 663. Education of Exceptional Children. (3) On sufficient demand. A general study of the field of special education, with emphasis on the development and organization of instructional materials; parent education; and coordination of the services of physicians, health departments, welfare agencies, and the school. Included is the study of administration of special services at the national, state, and local levels. Pr.: EDAF 215 and EDCI 300 or 451. EDAF-663-1-0808

EDAF 664. Mental Retardation. (3) On sufficient demand. Etiological, psychological, sociological, and educational aspects of mental retardation. Pr.: EDAF 663. EDAF-664-0-0808

EDAF 675. Readings in Education. (1-3) I, II, S. Readings in research and application in specialized areas in education. May be taken more than once. Pr.: EDAF 215. (See EDAO 675 and EDCI 675.) EDAF-675-3-0801

EDAF 686. Topics in Education. (1-3) I, II, S. Examination of current topic in area of specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: EDAF 215. (See EDAO 686 or EDCI 686.) EDAF-686-3-0801

EDAF 687. Field Experiences in Special Education. (1-3) On sufficient demand. Observation and supervised activities in schools, camps, clinics, or institutions as related to student's area of special interest or preparation. Pr.: EDAF 622 or EDAF 663. EDAF-687-2-0808

EDAF 711. Middle School Classroom Guidance. (3) On sufficient demand. Techniques of integrating guidance principles for pre- and early teens into a middle school concept; investigation of classroom dynamics for middle school teachers as members of the guidance team; involvement of teachers in model guidance programs. Pr.: EDAF 315. EDAF-711-0-0826

EDAF 715. Principles of Measurement. (3) I, II, S. Principles of constructing, administering, and evaluating tests and other measures used in schools. Focus on norm- and criterion-reference uses of teacher-made and standardized measures as an integral part of teaching. Pr.: EDAF 315. EDAF-715-1-0825

EDAF 720. Principles and Practices of Guidance. (3) I, S. Need and nature of guidance functions; personnel, their duties and relations; programs and evaluation of results. Pr.: EDCI 585 or 586 or consent of instructor. EDAF-720-1-0826

EDAF 721. Mental Hygiene in the School and Community. (3) On sufficient demand. Dynamics creating different personalities and deviant behavior. The educative process as it affects personality integrity. Pr.: PSYCH 28p or EDAF 215. EDAF-721-0-0808

EDAF 730. Learning Principles for School Environment. (3) I, II, S. Exploration of early and contemporary learning theories with special emphasis on human abilities, problems and developments in the teaching-learning process. Designed to develop understanding of the theoretical base upon which models of instruction are built. Pr.: EDAF 315. EDAF-730-0-0822

EDAF 752. Educational and Career Development Information. (3) I. A study of the competencies, skills, and demands necessary for individual growth in various careers, with attention to the collection, evaluation, dissemination, and use of career development information in school and community settings by counselors. Particular emphasis will be given to the area of career life planning. Pr.: Senior standing and consent of instructor. EDAF-752-0-0801

EDAF 753. Curriculum Development for the Mentally Retarded. (3) On sufficient demand. Curriculum content, methods, and organization of work in the education of mentally retarded children using experience units. Pr.: EDAF 663. EDAF-753-1-0810

EDAF 755. Guidance of the Exceptional Individual. (3) On sufficient demand. Strategies for teachers in working with the academic, vocational, personal, and social adjustment of the exceptional individual. The course will focus on the individual in pre-school, elementary, secondary, post-secondary, and adult settings. Pr.: EDAF 622, EDAF 663 and permission of instructor. EDAF-755-0-0802

EDAF 786. Practicum in Education of Exceptional Children. (3-5) On sufficient demand. Observation and participation in teaching exceptional children under the supervision of selected teachers in special education programs. Pr.: Admission to student teaching and senior standing. EDAF-786-2-0808

EDAF 795. Problems in Administration and Foundations. Credit arranged. I, II, S. Selected students are permitted to secure specialized training appropriate to the needs of the individual. The student's project may involve intensive library investigation in a special field or the collection and analysis of data pertinent to a given problem. All work is done independently under the direction of a faculty member. As many conferences are held as necessary to assure successful completion of a project. Pr.: Background of courses necessary for the problem undertaken and consent of instructor. EDAF-795-3-0801

Graduate credit

EDAF 810. The Impact of College on Students. (3) On sufficient demand. Study of institutional practices and policy and their impact on college students. Special attention will be given to the environmental, sociological, and psychological influences on the personal and educational maturity of students. Pr.: EDAF 715. EDAF-810-0-0826

EDAF 811. Philosophy of Education. (3) I, II, S. A critical analysis of major educational philosophies with discussion of their impact on the problem of education for democracy. Pr.: Twelve hours of education and consent of instructor. EDAF-811-0-0826

EDAF 812. History and Philosophy of Higher Education. (3) I. History and development of higher education with a study of the philosophy, objectives, and functions of various types of institutions. Pr.: Consent of instructor. EDAF-812-0-0821

EDAF 813. History of American Education. (3) II. Historical study of the educational endeavor in the United States with special attention to problems that have relevance to contemporary education. Readings, discussion, presentations by instruction leader and students. Pr.: EDAF 611 or consent of instructor. EDAF-813-0-0801

EDAF 815. Individual Appraisal. (3) II, S. Intensive study of standardized tests and their use. Emphasis given to values and problems of testing, selection and evaluation of measuring instruments, testing programs, and interpretation of test results. Pr.: EDAF 720 and EDAF 715. EDAF-815-1-0825

EDAF 816. Research Methods and Treatment of Data. (3) I, II, S. Principles of research in education; nature, organization, and presentation of research data; basic statistical computations and interpretations; selection of research problems. Pr.: Nine hours of education or consent of instructor. EDAF-816-1-0824

EDAF 817. Statistical Methods in Education. (3) I, II, S. An introductory yet comprehensive survey of common statistical analyses encountered in educational research. Computer oriented. Pr.: A first course in college mathematics plus either STAT 703 or EDAF 816. EDAF-817-1-0824

EDAF 818. General School Administration. (3) I, S. A panoramic view of the problems and tasks of school-system administration centered on the administrative process and substantive problems of leadership, personnel, business and finance, curriculum, facilities, and school-community relations. Pr.: One year of teaching experience. EDAF-818-1-0827

EDAF 819. Educational Finance. (3) On sufficient demand. An examination of issues relating to the financing of education, including local, state, and federal fiscal support, tax structures, distributional formulas, school finance reform strategies, and budget preparation and administration. Pr.: EDAF 818. EDAF-819-1-0827

EDAF 820. Individual Intelligence Testing. (3-5) I. Appraisal of individual intelligence with emphasis on techniques of administration, scoring, interpreting, and applying in school settings. Supervised practice in the use of WISC -R and other tests such as the Stanford-Binet, KABC, WPPSI, and WAIS-R. Pr.: EDAF 715 and consent of instructor. EDAF-820-1-0825

EDAF 823. Counseling Theory. (3) I, S. Theories, methods, and problems in counseling, relating the counseling process to dynamics of human behavior. Pr.: EDAF 815 or PSYCH 520 or equiv. and conc. enrollment. EDAF-823-1-0826

EDAF 825. Social Psychology of Education. (3) II. Consideration of the literature and applications of social-psychological studies of the student, student cultures, characteristics of educational institutions, and organizational change. Pr.: EDAF 611 or EDAF 812 or consent of instructor. EDAF-825-0-0821

EDAF 827. Foundations of Community Education. (3) On sufficient demand. A study of the relationship between the school and the community, with special emphasis on the development of a comprehensive community education program. Organizational patterns, financing, program development, and interaction with other community agencies are analyzed. Pr.: EDAF 818 or EDAF 611. EDAF-827-0-0827

EDAF 830. Educational Facility Planning. (3) On sufficient demand. Examination of issues relating to the provision of educational building and other facility needs, including planning, financing, construction, maintenance, and utilization. Pr.: EDAF 818. EDAF-830-1-0827

EDAF 831. Educational Law. (3) On sufficient demand. An examination of the legal status of educational institutions in the United States; the legal rights and responsibilities of educators including due process, tort liability and contracts; student rights; landmark court decisions; federal and state legislation impacting on education, and resources available to assist in developing solutions to legal problems. Pr.: EDAF 818. EDAF-831-0-0827

EDAF 832. The Community/Junior College. (3) I. This course is designed to give the student an overview of community/junior colleges. Emphasis on philosophy, purposes, curriculum, organization, professional staff, student-personnel programs, and the role of the comprehensive community junior college in higher education. Pr.: EDAF 315. EDAF-832-1-0806

EDAF 833. Administration of Special Education Programs. (2-3) I, II, S. The study of administrative units for special education, placement procedures, federal and state legislation, and program reimbursement and funding. Pr.: EDAF 818 or EDAF 811. EDAF-833-2-0808

EDAF 834. Strategies for Educational Change. (3) On sufficient demand. This course is designed to provide educators with conceptual knowledge concerning the problems and processes of educational change. Case studies of change are analyzed in the attempt to develop models of educational change. Pr.: EDAF 818 or 857, or EDCI 831. EDAF-834-0-0827

EDAF 835. The Principalship. (3) On sufficient demand. Alternate S. Analysis of the principal's role as he interacts with his various referent groups. Applicable to both elementary and secondary administration. Pr.: One year of teaching experience. EDAF-835-1-0827

EDAF 836. School-Public Relations. (2 or 3) On sufficient demand. Interrelationships that exist between the school and the community and the role of the teacher and administrator in such relationships. Pr.: EDAF 818 for graduate students in educational administration. One year of teaching experience for all others. EDAF-836-1-0827

EDAF 841. Educational Program Management and Evaluation. (3) On sufficient demand. An examination of program management techniques as well as formative evaluation strategies used in educational project and program administration. Pr.: EDAF 818. EDAF-841-0-0827

EDAF 845. Special Education Programming: Parental Involvement. (3) S. An in-depth consideration of the role of home and parents in the educational programming for school-age exceptional children. Emphasis on practical and positive strategies used in working with parents. Pr.: EDAF 622. EDAF-845-0-0808

EDAF 846. Introduction to Education of the Gifted. (3) On sufficient demand. An overview of historical perspectives related to gifted child education, various facets of intellectual and creative functioning, national and state guidelines, identification procedures, program prototypes, and current issues in gifted education. Pr.: EDAF 663. EDAF-846-0-0811

EDAF 847. Curriculum for the Gifted. (3) On sufficient demand. Theories and strategies for differentiating the curriculum for gifted students, emphasis on appropriate methods and materials. Pr.: EDAF 846. EDAF-847-0-0811

EDAF 856. Guidance in the Elementary School. (3) On sufficient demand. The nature and philosophy of guidance in the elementary school; the function of specialized child appraisal and counseling techniques in the unique interrelationships of the specialist and the teacher in the team approach to elementary school guidance. Pr.: EDCI 585, EDAF 720 and consent of instructor. EDAF-856-0-0826

EDAF 857. Organization and Administration of the Guidance Services Program. (3) II. Staff, facilities, tools, and techniques of the school and community in an organized guidance program. Pr.: Twelve semester hours in courses required to meet standard counselor qualifications; consent of instructor. EDAF-857-0-0826

EDAF 858. Group Guidance. (3) I, S. Designed to acquaint students with group procedures as basic tools in counseling, guidance, and other education services. Pr.: EDAF 823 and PSYCH 550. EDAF-858-1-0826

EDAF 859. Principles of Student Personnel Administration. (3) I. Principles, administrative organization, procedures, and problems of student personnel work in higher education; analysis of policy formulation, staff relationships, finance and controls, and physical plant needs; an introduction to the personnel services of: health, housing, food, student activities, placement, and counseling services. Pr.: Graduate standing and consent of instructor. EDAF-859-1-0826

EDAF 860. Adult Counseling. (3) I. Study of adults and the problems they face in their educational, psychological, social, and career development. Particular emphasis will be given to counseling theories and strategies important for counselors working with adults experiencing these developmental problems. Pr.: EDAF 823 or conc. enrollment. EDAF-860-0-0807

EDAF 861. Organization of Counseling Services for Adults. (3) On sufficient demand. Strategies for the development and implementation of counseling services for adults in school, community, business, and industrial settings. The course will focus on the integration of formal and informal educational, career development, and mental health programs developed for adults having life adjustment problems. Local, state, and federal programs and agencies and their role in adult counseling services will be examined. Pr.: EDAF 860. EDAF-861-0-0807

EDAF 862. Leisure Counseling. (3) On sufficient demand. Course is designed to develop leisure counseling models for use in community and institutional recreational programs and to provide skills and competencies in assessing, interviewing, and counseling individuals and groups in the use of leisure experiences. Pr.: REC 725 and/or EDAF 858. Same as REC 862. EDAF-862-0-0826

EDAF 863. Vocational Psychology. (3) S. Environment and human factors in occupational adjustment; appraisal of vocational fitness. Pr.: Consent of instructor. EDAF-863-0-0839

EDAF 871. Consultation for Counselors. (3) II. This course is designed to acquaint students with the major models of consultation that may be used by counselors for intervention with individuals and organizations. Techniques, issues, and ethical considerations are also addressed. Pr.: EDAF 823 and EDAF 858. EDAF-871-0-0826

EDAF 885. Practicum in Student Personnel Work. (3) I, II. Supervised professional experience in the various agencies that comprise a total program of student personnel services within a post-secondary, college, or university setting. Pr.: EDAF 859 and consent of instructor. EDAF-885-2-0826

EDAF 886. Counseling Techniques and Practice. (3) I, II, S. A pre-practicum in counseling and interviewing—building facilitative relationships, case conceptualization, appropriate counseling strategy choice and evaluating termination. A consideration of ethics and unique features in selected cases will be discussed. Pr.: EDAF 823 or conc. enrollment. EDAF-886-1-2-0826

EDAF 887. Practicum in Counseling. (3) I, II. Supervised practical experience in counseling. Pr.: EDAF 823 and consent of instructor. (Same as PSYCH 860.) EDAF-887-2-0826

EDAF 888. Seminar in Student Personnel Work. (1-4) On sufficient demand. Credit arranged. Intensive discussion of a problem of current professional interest based on study of pertinent original literature. May be repeated with consent of supervisory committee. Pr.: Consent of instructor. EDAF-888-0-0826

EDAF 889. Practicum in School Administration. (3-6) I, II, S. Supervised on-the-job experience in school administration. Pr.: Kansas School Administrator's Certificate or consent of instructor. EDAF-889-2-0827

Seminars in Administration and Foundations (Var.) On sufficient demand. These seminars will consider research in the several fields of education represented in terms of the special interests of the students. Pr.: Consent of instructor.

EDAF 890. Educational Administration. EDAF-890-0-0827

EDAF 891. Social Foundations. EDAF-891-0-0821

EDAF 892. Guidance Services. EDAF-892-0826

EDAF 893. Special Education. EDAF-893-0808

EDAF 894. Community Education. EDAF-894-0-0807

EDAF 898. Master's Report. (Var.) I, II, S. Pr.: Consent of instructor. EDAF-898-3-0801

EDAF 899. Master's Research. (Var.) I, II, S. Pr.: Consent of instructor. EDAF-899-4-0827

EDAF 910. Educational Personnel Administration. (3) II. Personnel practices in education are considered along with the implications of collective negotiations and professional accountability for personnel policies. Pr.: EDAF 818. EDAF-910-0-0805

EDAF 915. Theory of Measurement. (3) I. A course designed to provide the theoretical background needed for students who wish to (1) develop greater competence in practical uses of tests in educational settings, (2) pursue academic study of measurement theory, and (3) develop instruments for research use. Pr.: EDAF 715. EDAF-915-1-0825

EDAF 917. Experimental Design in Educational Research. (3) I, II, S. Philosophy, planning and evaluation of research in education. Experimental designs appropriate for educational research with special emphasis on multivariable procedures. Computer oriented. Pr.: EDAF 817. EDAF-917-1-0824

EDAF 920. Advanced Educational Psychology: Learning. (3) I, S. The learning process, with special emphasis on human abilities and early and contemporary learning theories, with applications to selected recent developments in teaching and persistent problems and issues in education. Pr.: EDAF 315 or its equiv. EDAF-920-1-0822

EDAF 921. Advanced Educational Psychology: Development. (3) II. Advanced studies in physical, intellectual, emotional, social, and personality development with the focus on the importance of these factors to the educational process. Pr.: EDAF 315. EDAF-921-1-0822

EDAF 924. Systems and Theories of Vocational Counseling. (3) On sufficient demand. A historical and contemporary analysis of systems and theories of vocational psychology and their implications for use in the counseling setting. Pr.: EDAF 752 and EDAF 823. EDAF-924-0-0839

EDAF 926. Theory in Educational Administration. (3) II. Organizational and administrative theory as applied to the school and the functions of the school administrator. The process of theory development in educational administration is also considered. Pr.: EDAF 818. EDAF-926-0-0827

EDAF 927. Higher Education Administration. (3) On sufficient demand. Administration theory applied to the organization and administration of colleges and universities; special reference to structure, governing boards, administrative roles, decision-making, and analysis of selected problems. Pr.: EDAF 812. EDAF-927-1-0827

EDAF 928. Educational Governance. (3) On sufficient demand. An analysis of educational decision-making at the local, state, and national levels. The internal decision-making practices of professional educational organizations are also considered. Pr.: EDAF 818 and six additional hours in Educational Administration. EDAF-928-0-0801

EDAF 958. Advanced Group Counseling. (3) II. The examination of selected group counseling theories and their relevance for the practice of group counseling in a variety of settings. Pr.: EDAF 858. EDAF-958-0-0826

EDAF 959. Practicum in Group Counseling. (3) On sufficient demand. Supervised group counseling experience in a variety of settings. Pr.: EDAF 959 Group Guidance and EDAF 958. EDAF-959-2-0826

EDAF 985. Advanced Counseling Theory. (3) I. Reading and discussion of primary works of major counseling theories; advanced theoretical issues in counseling. Pr.: EDAF 823 and EDAF 887. EDAF-985-0-0826

EDAF 986. Advanced Counseling Practices. (3) I, II. Intense supervised practice in counseling. Particular emphasis will be given to the development of skills for intervention into human problems and time-limited case management. Pr.: EDAF 823 and EDAF 887. EDAF-986-2-0826

EDAF 987. Counseling Supervision Practicum. (3) On sufficient demand. An advanced course in the theory, techniques, and problems of supervising persons being trained as counselors. Course emphasis is on actual supervisory experiences with beginning counselors. Open to advanced doctoral students only with consent of instructor. EDAF-987-2-0826

Internship in EDAF. (Var.) On sufficient demand. Studies of and field experiences in the development of programs in cooperating schools and educational or related agencies under the supervision of College of Education graduate faculty members. A maximum of six credit hours may be chosen from the areas listed. Pr.: Consent of instructor.

EDAF 988. Special Education. (Var.) On sufficient demand. Studies of and field experiences in the development of programs in cooperating schools and educational or related agencies under the supervision of College of Education graduate faculty members. A maximum of six credit hours may be chosen. Pr.: Consent of instructor. EDAF-988-2-0808

EDAF 989. Educational Administration and Foundations. EDAF-989-2-0827

EDAF 990. Student Personnel Services. EDAF-990-2-0826

Advanced Seminars in EDAF. (2-3) On sufficient demand. These seminars will critically consider recent research in the designated fields. The emphasis will be upon individual studies and small group interaction. Enrollment is restricted to those students who have been admitted to the doctoral program in education and who have completed substantial amounts of graduate study in the designated fields. Pr.: Consent of instructor.

EDAF 994. Special Education. EDAF-994-2-0808

EDAF 999. Research in Administration and Foundations. (Var.) I, II, S. Individual investigation in the field of a student's specialization. Pr.: Sufficient training to carry on the line of research undertaken. EDAF-999-4-0801

Adult and Occupational Education

Ralph G. Field,* head of department

Professors Apel,* Busset,* Eyestone, Johnson,* Meisner,* Prawl,* Terrass,* and Welton;* Associate Professors Albracht,* Carpenter,* Carter,* Griffith,* Hausmann,* Oaklief,* and Taylor; Assistant Professors Balogh, Cunningham, Jorns, Parmley,* and Wissman; Instructors Davison-Crews, Hachmeister, Schafer, and Jankovich; Emeriti: Associate Professor Hall.*

The undergraduate and graduate programs in the adult and occupational area are designed for individuals seeking to prepare themselves for roles as professional educators.

Undergraduate teacher education programs are designed to prepare prospective teachers for teaching and allied positions in adult and continuing education, business education and career education.

Students completing the agriculture education undergraduate curriculum offered in cooperation with the College of Agriculture are awarded a Bachelor of Science in Agricultural Education.

Students completing the home economics education undergraduate curriculum offered in cooperation with the College of Home Economics are awarded a Bachelor of Science in Home Economics.

Students completing the adult and continuing education and the business education undergraduate curriculum are awarded a Bachelor of Science in Education. Students completing a B.S. in agricultural education, home economics education, and business education may be certified to teach.

The graduate programs offered through the department lead to an M.S. in education, home economics education, or agricultural education and to the doctor of philosophy degree. Areas of specialization at the graduate level are: adult and continuing education, occupational education, career education, home economics education, agricultural education, and vocational education.

Courses in adult and occupational education

Undergraduate credit

EDAO 318. Adult and Continuing Education Colloquium. (Var.) On sufficient demand. Discussion, assigned readings, and lectures over selected trends, developments, and problems which are peculiar to the overall field of Adult and Continuing Education. Students are encouraged to engage in self study concerning their place in the profession of adult and continuing education. No more than six hours may apply to a degree. EDAO-318-0-0807

EDAO 319. Agricultural Education Colloquium. (Var.) I, II. On sufficient demand. Discussion, assigned readings, and lectures over the selected trends, developments, and problems which are peculiar to the overall field of agricultural education in Kansas. Developments in new legislation, techniques, and philosophies are discussed and applied. Students are encouraged to engage in self study concerning their place in the profession of agricultural education. EDAO-319-0-0899

Undergraduate and graduate credit in minor field

EDAO 500. Methods of Teaching Agriculture. (2) I, II. Lesson plans; organization of materials and direction of class, laboratory and field instruction work in vocational agriculture; individual farming programs and class and group activities; coordination of farm mechanics work; administration, organization, and coordination of the Future Farmers of America organization with the program of instruction in vocational agriculture. Pr.: EDAF 315. EDAO-500-0-0899

EDAO 501. Independent Study in Education. (1-3). I, II. Selected topics in professional education. Maximum of three hours applicable toward degree requirements. Pr.: Consent of department head. EDAO-501-3-0899

EDAO 550. Methods of Teaching Home Economics. (2) I, II. Selection of techniques: organization, preparation, and presentation of materials for teaching secondary programs. One hour rec. and two hours lab. a week. Pr.: Junior standing; EDAO 621 or conc. enrollment; taken semester prior to EDAO 586. EDAO-550-0-0899

EDAO 586. Teaching Participation in the Secondary School. (Var.) I, II. Observation and teaching participation under direction of selected teachers in junior and senior high schools. Pr.: Admission to Student Teaching. (See EDCI 586.) EDAO-586-2-0803

Undergraduate and graduate credit

EDAO 605. Extension Organization and Programs. (3) I, S. Development and objectives of Cooperative Extension and other University adult education programs; with emphasis on programs and procedures. Pr.: Senior standing or consent of instructor. EDAO-605-0-0807

EDAO 606. Principles of Teaching Adults in Extension. (3) II, S. Methods and principles of adult teaching, with emphasis on Cooperative Extension Service; application to various adult education programs. Pr.: Senior standing, juniors by consent of instructor. EDAO-606-0-0807

EDAO 610. Occupational Home Economics Education. (2) I, II, S. Principles and procedures in planning and organizing home economics related occupational programs, including considerations of methods and teaching materials peculiar to these programs. Pr.: EDAF 215 or conc. enrollment. EDAO-610-0-0899

EDAO 611. Coordination Techniques. (1) I, II. Designed to acquaint students with techniques in selecting, implementing and coordinating occupational programs between the school and the business community. Pr.: EDAO 620 Principles and Philosophy of Vocational Education. EDAO-611-0-0899

EDAO 612. Job Analysis. (1) I, II. Designed to acquaint students with techniques of analyzing jobs and tasks related to occupations. Pr.: EDAO 620 Principles an Philosophy of Vocational Education. EDAO-612-0-0899

EDAO 614. International Education. (3) On sufficient demand. Contemporary overview of the field of International education and an introduction to three of its parts: comparative education, intercultural education, and developmental education. Pr.: PSYCH 110. EDAO-614-0-0899

EDAO 620. Principles and Philosophy of Vocational Education. (3) I, II, S. Provision for vocational education in Kansas and other states and countries; principles and philosophy underlying such education, relation of vocational education to school objectives and community, state, and national needs. Pr.: EDAF 315. EDAO-620-0-0839

EDAO 621. Program Planning in Vocational Education. (3) I, II, S. The program development and planning process; development of guides for teaching and evaluating reimbursable secondary programs. Pr.: EDAO 620. EDAO-621-0-0839

EDAO 625. Adult Basic Education Techniques. (3) On sufficient demand. Emphasis on providing students with an understanding of the selection, utilization, and development of adult basic education reference, resources, and other materials. Pr.: EDAF 215. EDAO-625-0-0807

Practica in Adult and Occupational Education. (1-6) On sufficient demand. Related occupational or professional experiences in approved industry, school, Cooperative Extension Service, or similar agency setting under faculty supervision. Pr.: Consent of instructor.

EDAO 632. Career Education. EDAO-632-2-0807

EDAO 633. Adult Education. EDAO-633-2-0807

EDAO 634. Agriculture Related Occupations. EDAO-634-2-0899

EDAO 635. Business and Office Occupations. EDAO-635-2-0807

EDAO 636. Extension Education. EDAO-636-2-0807

EDAO 637. Home Economics Related Occupations. EDAO-637-2-0899

EDAO 638. Industrial Occupations. EDAO-638-2-0839

EDAO 639. Coordination of Cooperative Vocational Education. (2 or 3) I, II, S. Emphasis on the legal aspects and other minimum requirements essential to conducting cooperative vocational education programs at the secondary and post-secondary levels. Pr. or conc.: EDAO 620. EDAO-639-0-0839

EDAO 640. Advising Youth Organizations. (2-3) On sufficient demand. An examination of the role of an advisor in the effective operation of a youth organization. Pr.: PSYCH 110. EDAO-640-0-0899

EDAO 650. Women, Education and Work. (2-3) II, S. Emphasizes the collective and individual educational needs of women in and out of the work force and the part that occupational/educational preparation contributes to their participation in the work force. Pr.: SOCIO 211 or equiv. EDAO-650-0-0899

EDAO 675. Readings in Education. (1-3) I, II, S. Readings in research and application in specialized areas in education. May be taken more than once. Pr.: EDAF 215. No more than six hours may apply to a graduate degree. (See EDAF 675 and EDCI 675.)

EDAO 680. Introduction to Adult Education. (3) I, II, S. A survey of adult education. Consideration given to articulation with other levels of education. Identification of changing needs within the field are reviewed. Pr.: Consent of instructor. EDAO-680-0-0807

EDAO 686. Topics in Education. (1-3) I, II, S. Examination of current topic in area of specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: EDAF 215. No more than six hours may apply to a graduate course. (See EDAF 686 and EDCI 686.)

EDAO 701. Administration and Supervision of Vocational Education. (2-3) On sufficient demand. II, S. Emphasis on the duties and responsibilities of administrative and supervisory personnel responsible for the promotion, development, and coordination of comprehensive vocational-technical education programs at the local level. Pr.: Teaching experience or consent of instructor. EDAO-701-0-0839

EDAO 703. Teaching Adult Classes in Agriculture. (2 or 3) On sufficient demand. Organization and preparation of materials and methods used in teaching adult classes in vocational education in agriculture for young farmers and adults. Departments are visited for evaluation of programs and results. Pr.: EDAO 620. EDAO-703-0-0899

EDAO 705. Organization Problems in Teaching Farm Mechanics. (Var.) On sufficient demand. Analysis of the agricultural mechanics course of study; needs and interests of students; learning difficulties; skills and technical knowledge required; correlation with agriculture; application of laws of learning to the teaching process; determination of objectives. Pr.: EDAO 586. EDAO-705-0-0839

EDAO 707. Introduction to Community Educational Development. (3). A comprehensive review of factors related to community change and the role of educational programs in dealing with them. Emphasis is on problem-solving approaches and change-implementing programs. EDAO-707-0-0807

EDAO 713. Occupational Analysis. (2 or 3) I, II, S. An introduction to various techniques used in analyzing occupations and jobs. Emphasis on developing and organizing related instructional materials and content. Pr. or conc.: EDAO 620. EDAO-713-0-0807

EDAO 753. Introduction to Occupational Education. (3) I, II, S. Overview of occupational education at all levels and its role in society. Designed for administrators, counselors, and vocational educators who perform a leadership function involving occupational education programs. Pr.: Teaching experience or consent of instructor. EDAO-753-0-0807

EDAO 754. Adult Basic Education. (3) On sufficient demand. Evolving adult basic and high school equivalency education concepts will be examined. Program implementation, supervision, methods, and materials are emphasized. Pr.: Adult teaching experience or consent of instructor. EDAO-754-0-0807

EDAO 780. Educational Gerontology. (3) On sufficient demand. Designed for both the practitioner and those interested in educational gerontology as a field of inquiry, this course will combine both practice and theory. It will examine education for and about aging, with particular reference to the role, needs, and ability of persons in the later years as learners. Stressing current trends and prospective new developments in the field, it will include a review of present programs and discussion of the teaching-learning process for older adults. Pr.: EDAO 680. EDAO-780-0-0807

EDAO 788. Seminar in Agricultural Education. (Var.) On sufficient demand. Seminars will consist of problems in the several fields of agricultural education represented in terms of special interests of the students. Designed to serve undergraduate as well as graduate needs. Pr.: Consent of instructor. EDAO-788-0-0899

EDAO 790. Characteristics of the Adult Learner. (3) II, S. Designed for teachers and administrators in adult and occupational programs who need a familiarity with the major characteristics of adulthood which affect the adult as a learner. Includes an examination of early, middle, and late adulthood. Pr.: EDAO 680 or EDAF 215 or PSYCH 110. EDAO-790-0-0807

EDAO 791. Career Education. (2-4) On sufficient demand. Emphasis on providing for prevocational experiences including orientation and exploratory and applied experiences in school and nonschool situations. Pr.: Teaching experience or consent of instructor. EDAO-791-0-0839

EDAO 792. Hospital and Industry Adult Education. (3) On sufficient demand. An introduction to principles, roles, organization, procedures, and problems of adult education in hospitals, industry, and related agencies. Pr.: Consent of instructor. EDAO-792-0-0839

EDAO 795. Problems in Adult and Occupational Education. (Var.) I, II, S. Independent study of specific problems in the areas of adult or occupational education. Pr.: Consent of instructor. EDAO-795-3-0807

Graduate credit

EDAO 805. Field Experience in Agricultural Education. (2 or 3) On sufficient demand. A course designed for prospective teachers to help bridge the gap between classroom theory and student teaching. Emphasis will be placed on observation of and participation in school and community organizations and programs. Pr.: EDAO 620 and consent of instructor. EDAO-805-0-0899

EDAO 810. In-Service Education for Beginning Home Economics Teachers. (2-3) I, II, S. Designed for beginning teachers who desire assistance with vocational program management, instructional planning and delivery, professional role development, and the organization of information related to vocational home economics teaching. Pr.: EDAO 550 or equiv. EDAO-810-0-0899

EDAO 811. Consumer Education. (2 or 3) S. Evaluate syllabi and approaches to teaching consumer education. Relate consumer education to consumer economics and consumer affairs. Pr.: EDAO 550 or EDAO 752 and FEC 400 or consent of instructor. (See FEC 811.) EDAO-811-0-0807

EDAO 820. Advanced Methods in Adult Teaching. (3) On sufficient demand. Emphasis on teaching strategies, techniques, and media appropriate to various adult education programs. Pr.: Teaching experience or consent of instructor. EDAO-820-0-0807

EDAO 822. Young Farmer and Adult Farmer Education in Agriculture. (2 or 3) I, II, S. Organization, objectives, and procedures of conducting Young Farmer and Adult Farmer classes. Designed for teachers in service. Pr.: Experience in teaching vocational agriculture. EDAO-822-0-0899

EDAO 823. Agricultural Education for Beginning Teachers. (1 to 3) I, II. Securing and organizing information and planning teaching activities which will help the beginning vocational agriculture teacher. Pr.: Graduation from the Curriculum in Agricultural Education. EDAO-823-0-0899

EDAO 825. Theory and Practice of Continuing Education. (3) I, S. Specific instruction on facilitating continuing education programs; emphasis on serving the institution, part-time students, community, and other interests. Pr.: EDAO 605 or EDAO 680. EDAO-825-0-0807

EDAO 830. Program Planning in Adult Education. (3) II, S. An examination of the basic situations in which adult education occurs and fundamental steps by which learning is made more effective in those situations. Pr.: Graduate standing. EDAO-830-0-0807

EDAO 834. Trends in Home Economics Teaching. (Var.) I, II, S. Advanced study of evolving trends and materials for secondary programs; application to teaching and curriculum. Pr.: EDAO 621 and teaching experience. EDAO-834-0-0899

EDAO 840. Curriculum in Agriculture I. (2 or 3) S. Curriculum problems; planning local programs in agriculture; developing facilities and plans for meeting current and advanced problems in the teaching of agriculture. Pr.: One year of teaching in agriculture. EDAO-840-0-0899

EDAO 842. Curriculum in Agriculture II. (2 or 3) S. Continuation of EDAO 840. Pr.: EDAO 840 or consent of instructor. EDAO-842-0-0899

EDAO 844. Curriculum Development in Vocational Home Economics. (3) I, S. The course focuses on current trends in vocational home economics curriculums. Designed especially to assist home economics teachers and supervisors in the articulation of secondary programs, analysis and development of curriculum models for specific school situations. Pr.: EDAO 620. EDAO-844-0-0899

EDAO 845. Field Studies in Agricultural Education. (2 or 3) On sufficient demand. Planning, organizing, and coordinating the various phases of the local program of vocational education in agriculture. Pr.: Experience in teaching agriculture or consent of instructor. EDAO-845-0-0899

EDAO 860. Nontraditional Study for Adults. (3) II, S. Designed to provide a conceptual understanding of current forms of nontraditional study and accreditation with emphasis on organizing studies to serve adult needs. Pr.: EDAO 680. EDAO-860-0-0807

EDAO 864. Assessment in Home Economics Education. (3) II, S. A study of evaluation theory and techniques for home economics educators. The primary emphasis will be placed upon program, process, and product evaluation relative to federal, state, and local home economics education programs. Pr.: EDAF 315 or equiv. EDAO-864-0-0899

Seminars in Education. Credit arranged. On sufficient demand. These seminars will consider research in the several fields of education represented in terms of the special interests of the students. Pr.: Consent of instructor.

EDAO 890. Home Economics Education. EDAO-890-0-0899

EDAO 891. Agricultural Education. EDAO-891-0-0899

EDAO 892. Adult Education. EDAO-892-0-0807

EDAO 899. Master's Research. (Var.) I, II, S. Pr.: Consent of instructor. EDAO-899-3-0839

EDAO 910. Occupational Experience Supervision. (3) II, S. Analysis of objectives and scope of occupational experience programs. Emphasis is placed on the organization, administration, related instructional procedures, coordination techniques, and evaluation of occupational experience programs. Pr.: Teaching experience or consent of instructor. EDAO-910-0-0807

EDAO 914. Technical Education. (3) I, S. An analysis of the evolving role of technical education and other post-secondary occupational education with emphasis upon principles underlying organization and practice unique to technical education. Pr.: Graduate standing. EDAO-914-0-0839

EDAO 916. Foundations of Adult Education. (3) On sufficient demand. A study of adult education historical perspectives, contemporary institutions and programs, teaching-learning process, administrative practices, and conceptual roles. Pr.: One year of field experience or approval of instructor. EDAO-916-0-0807

EDAO 929. Supervision in Occupational Education. (2-3) I, S. Philosophy and principles of effective supervision related to occupational education programs; application of principles to

problems met by student teacher supervisors. Pr.: Teaching experience or consent of instructor. EDAO-929-0-0839

EDAO 937. Organization and Administration of Adult Education. (3) I, S. A critical study of organizational procedures and administrative practices as related to the implementation and maintenance of an effective program in adult education. Pr.: Graduate standing. EDAO-937-0-0807

EDAO 940. Organization and Administration of Occupational Education. (3) I, S. An overview of the organization of occupational education programs in agriculture, business, distributive education, health, home economics, trade and industry, technical, and related fields and their administration. Emphasis on federal-state-local relationships. Pr.: EDAO 701 or consent of instructor. EDAO-940-0-0807

EDAO 952. Internship in Adult and Occupational Education. (Var.) On sufficient demand. Studies of and field experiences in the development of programs in cooperating schools and educational or related agencies under the supervision of College of Education graduate faculty members. A maximum of six credit hours. Pr.: Consent of instructor. EDAO-952-2-0807

EDAO 962. Advanced Seminars in Adult and Occupational Education. (Var.) On sufficient demand. These seminars will critically consider recent research in the designated fields. The emphasis will be upon individual studies and small group interaction. Enrollment is restricted to those students who have been admitted to the doctoral program in education and who have completed substantial amounts of graduate study in the designated fields. Pr.: Consent of instructor. EDAO-962-0-0807

EDAO 999. Research in Adult and Occupational Education. (Var.) I, II, S. Pr.: Sufficient training to carry on the line of research undertaken and consent of instructor. EDAO-999-4-0807

Curriculum and Instruction

Mary McDonnell Harris, head of department

Professors Bailey,* Boyer,* Brookhart,* Dixon,* Harris,* Hause,* Horn,* Kurtz,* Lindsey, Price,* Schell,* and Utsey;* Associate Professors Alexander,* Bartel,* Heerman,* Hortin,* McAnarney,* Smith,* Sturr,* Trennepohl,* and Wauthier;* Assistant Professors Allen, Blohm, Burden,* Byars,* Colwell,* Enochs,* Mangano, Miller, Perl,* Pickle, Treadway, Vallance,* Weimer,* and Whiteside; Instructors Hoffman, Luthi, and B. Newhouse; Assistant Instructor Goodenow; Emeriti: Professors Craig, Littrell,* Loeb,* and Smethers.

The Department of Curriculum and Instruction has both undergraduate and graduate programs. There are two undergraduate programs in the department: elementary education—a four-year program leading to certification as an elementary school teacher; and secondary education—a four-year program leading to certification as a secondary school teacher.

The elementary and secondary education programs are characterized by extensive field experiences. Generally, teacher education programs require coursework in several departments in the University. Cooperative efforts for planning and teaching are made by the various academic units.

The graduate programs offered through the department lead to the master of science and the doctor of philosophy. The areas of specialization at the graduate level are: elementary education, secondary education, college teaching, multicultural education, educational media and technology, and reading/language arts.

The department also offers graduate courses in off-campus settings. These courses are designed and offered to address in-service, recertification and/or graduate program needs of educators.

Undergraduate credit

EDCI 050. Developmental Reading Laboratory. (3) I, II. Designed to improve the college student's reading skills, rates of comprehension, vocabulary, and study skills. Pr.: Consent of instructor. EDCI-050-1-0801

EDCI 051. Study Skills Laboratory. (1-3) I, II, S. Designed to help the student to learn effective study methods, analyze difficulties in reading and studying, how to prepare for and improve performance in examinations. EDCI-051-0-0829

EDCI 217. Introduction to the Library. (1-2) I, II, S. Use of the library to find information for papers and/or library-related assignments. Modular format permits study of reference materials related to the student's field of study. EDCI-217-3-0801

EDCI 300. Principles of Elementary Education. (3) I, II. An over-all view of the elementary school: organization, management, purpose, curriculum trends, and pupil characteristics. Pr.: Junior standing. EDCI-300-0-0802

EDCI 316. Introduction to Instructional Media. (1) I, II, S. Experiences in the choice, production, evaluation, and utilization of instructional materials. Operation and simple maintenance of basic types of instructional equipment. Pr.: Admission to Teacher Education or consent of instructor. EDCI-316-1-0801

EDCI 317. Instructional Media for Elementary Children. (3) I, II, S. Methods of planning and evaluating experiences to help children gain skills for interpreting life experiences through book and nonbook media. Pr.: EDAF 215 or consent of instructor. EDCI-317-0-0802

EDCI 318. Instructional Media and Technology. (2) I, II, S. Experiences in the selection, production, utilization, and evaluation of instructional materials. Applications of technology in education, including microcomputer use, but not programming. Operation and simple maintenance of equipment. Pr.: Admission to Teacher Education. EDCI-318-1-7-0801

EDCI 325. Safety. (3) I, II, S. Fundamentals of accident analysis and prevention, maintenance, human factors, safety standards, treatment of special hazards. Three hours rec. a week. Pr.: Junior standing. EDCI-325-1-0836

EDCI 326. Problem in Safety Education. (1). Pr.: Consent of instructor. EDCI-326-3-0836

EDCI 328. Driver and Traffic Safety Education I. (3) I, S. Critical analysis of traffic accidents, attitude factors, essential knowledge of automobile operation, traffic laws and regulations. Includes laboratory experience in the use of psychophysical testing and in the teaching of driving skills. Two hours rec. and three hours lab a week. Pr.: PSYCH 110, EDAF 215, EDCI 325, a valid driver's license, and good driving record. EDCI-328-1-0836

EDCI 330. Driver and Traffic Safety Education II. (3) II, S. This course deals with professional preparation for secondary school instruction in this field. Primary areas of study include classroom and in-car teaching techniques. A study of organization and administration of driver education: emphasis on competence in transforming knowledge and skills, as well as inspiring satisfactory attitude in students. Two hours rec. and three hours lab a week. Pr.: EDCI 328, 21 years of age, and senior standing. EDCI-330-1-0836

EDCI 331. Problem in Driver Education. (1). Pr.: Consent of instructor. EDCI-331-1-0836

EDCI 451. Principles of Secondary Education. (3) I, II, S. Junior and senior high school organization and objectives, their genesis and curriculum trends, characteristics of student population, and legal status and practices. Pr.: EDAF 315. EDCI-451-0-0803

EDCI 460. Education in Multi-Ethnic Schools. (2-3) I, II. An analysis of ethnic/racial components reflected in classrooms (rural and urban) which must be considered for effective instruction with diverse populations—elementary and secondary. Cross-ethnic, cross-racial instructional strategies are explored for productive learning outcomes in a multi-cultural society. Pr.: Junior standing. EDCI-460-0-0801

EDCI 469. Physical Education in Elementary Schools. (3) I, II, S. Methods of teaching and organization of materials in a progression for an elementary physical education program. Pr.: Admission to Teacher Education, and PE 206, and at least two courses from the elementary physical education specialization. EDCI-469-0-0802

EDCI 470. Science for Elementary Schools. (3) I, II, S. The relationships among nature, environment, and elementary science in their role in childhood education resources and activities suitable to the elementary school. Pr.: Admission to Teacher Education or consent of instructor. EDCI-470-1-0834

EDCI 471. Language Arts for Elementary Schools. (3) I, II, S. Modern trends in the teaching of reading, oral language, composition, and spelling. Pr.: Admission to Teacher Education or consent of instructor. EDCI-471-1-0802

EDCI 472. Social Studies for Elementary Schools. (3) I, II, S. Course of study content as a basis for consideration for modern classroom procedure; objectives and problems in the teaching of social studies. Pr.: Admission to Teacher Education or consent of instructor. EDCI-472-1-0802

EDCI 473. Mathematics for Elementary Schools. (3) I, II, S. The teaching of mathematics in the elementary schools, including the nature of mathematical processes, curriculum, methods of instruction, instructional materials, and the evaluation of outcomes. Pr.: Admission to Teacher Education or consent of instructor. EDCI-473-1-0833

EDCI 474. Elementary School Reading. (3) I, II, S. An introductory course in the content, methods, and materials of the total reading program in the elementary school. Pr.: Admission to Teacher Education or consent of instructor. EDCI-474-1-0830

EDCI 476. Methods of Teaching in the Secondary School. (2 or 3) I, II. General principles of teaching applied to secondary school instruction; motivation, organization of subject matter; lesson planning; evaluation and reporting; challenging the levels of ability; organization and management of the classroom; attention given to both methodology and materials of the secondary schools. Pr.: Admission to Student Teaching. EDCI-476-1-0803

Undergraduate and graduate credit in minor field

EDCI 502. Independent Study in Education. (1-3) I, II, S. Selected topics in professional education. Maximum of three hours applicable toward degree requirements. Pr.: Consent of department head. EDCI-502-3-0801

EDCI 560. Art for Exceptional Children. (3) I, II. A study of the knowledge and methods of utilizing art concepts and art activities by the elementary teacher to develop and enhance the learning experiences of exceptional children, including the disadvantaged, physically handicapped, mentally retarded, and emotionally disturbed. Six hours lab. Pr.: Elementary Education or Art major and PSYCH 110. Same as ART 560. EDCI-560-1-0831

EDCI 582. Teaching Participation in Music. (Var. 8-12) I, II. Observation and teaching under the direction of selected music teachers in elementary, middle level, and secondary school music programs. Pr.: Admission to Student Teaching. EDCI-582-2-0832

EDCI 585. Teaching Participation in the Elementary School. (Var.) I, II. Observation and teaching participation under the direction of selected elementary teachers. Pr.: EDCI 300, 470, 471, 472, 473 and admission to Student Teaching. EDCI-585-2-0802

EDCI 586. Teaching Participation in the Secondary School. (Var.) I, II. Observation and teaching participation under direction of selected teachers in junior and senior high schools. Pr.: Admission to Student Teaching. (See EDAO 586.) EDCI-586-2-0803

Undergraduate and graduate credit

EDCI 600. Reading with Practicum. (3) I, II, S. Supervised observation and teaching of reading in approved school classrooms. Pr.: EDCI 474 or teaching experience. May not apply to Reading Specialist endorsement. EDCI-600-0-0802

EDCI 614. Laboratory Techniques in Teaching Science. (3) I, II. Rationale for laboratory in secondary school science. The design and implementation of laboratory activities and demonstrations in a high school science program. Pr.: Junior or senior standing and consent of instructor. EDCI-614-1-0834

EDCI 617. Corrective Reading Instruction. (1-3) I, II, S. Supervised tutoring of children with reading difficulties. Not open to students with credit in EDCI 847. Pr.: Student teaching experience or consent of instructor. EDCI-617-2-0817

EDCI 620. Foreign Language Methods for Elementary Schools. (3) II. Methods of teaching and organization of materials for the foreign language program in the elementary school. Pr.: Educational Psychology II, 24 hours in the foreign language, and conc. enrollment in either Preprofessional Lab (DED 100, 1 cr.) or Teaching Participation in the Elementary School (EDCI 585, 4 cr.). EDCI-620-0-0802

EDCI 625. The Teacher and Child Abuse. (3) II, S. An exploration of child abuse and neglect with specific references to legal and moral responsibilities of teaching. Suggestions for detection, reporting, and responsive instruction for suspected cases of child abuse and neglect. Pr.: PSYCH 110 and junior standing. EDCI-625-0-0801

EDCI 630. Curriculum Materials for Ethnic Diversity. (3) I, II, S. An examination and analysis of recent materials and practices of schools serving multi-ethnic student bodies, particularly minorities from disadvantaged backgrounds. Materials include any items utilized by the school in implementing the curriculum. Pr.: Senior standing or higher. EDCI-630-2-0801

EDCI 635. Curriculum Materials for Non-Sexist Teaching. (3) II. Analysis of recent materials from perspective of concern with their potential for sex role stereotyping. Examination of teaching resource materials for curriculum intended to facilitate non-sexist teaching. Pr.: Junior standing or higher. EDCI-635-0-0829

EDCI 662. Instructional Television. (3) On sufficient demand. The principles of instructional television: its development, programming, techniques, and application. Pr.: Junior standing. EDCI-662-1-0801

EDCI 675. Readings in Education. (1-3) I, II, S. Readings in research and application in specialized areas in education. May be taken more than once. Pr.: EDAF 215 or EDAO 540. (See EDAF 675 and EDAO 675.) EDCI-675-3-0829

EDCI 686. Topics in Education. (1-3) I, II, S. Examination of current topic in area of specialization of faculty. Varied topics offered each semester so course may be repeated. Pr.: EDAF 215 or EDAO 540. (See EDAF 686 and EDAO 686.) EDCI-686-0-0829

EDCI 704. Extra-Class Activities. (3) II, S. Organization, sponsorship, and objectives of clubs, publications, athletics, dramatics, musical organizations, assemblies, home room, and student council in junior and senior high schools. Pr.: EDCI 450, senior standing, or consent of instructor. EDCI-704-0-0803

EDCI 706. Aerospace Education Workshop. (3) S. To provide elementary and secondary teachers with knowledge, skills, and attitudes about aerospace activities and the total impact of air and space vehicles upon society. Pr.: EDCI 475, EDCI 586 or teaching experience. EDCI-706-1-0801

EDCI 715. Reading in the Content Areas. On sufficient demand. Information concerning the reading process and techniques for helping students develop reading and study skills needed in the content areas. Course is designed for classroom middle level and secondary teachers. Pr.: Senior standing. EDCI-715-0-0830

EDCI 717. Reading Comprehension. (3) On sufficient demand. Reviews comprehension theory and research; explores strategies for developing reading comprehension in readers. K-12; examines evaluative devices for assessing comprehension abilities. Pr.: EDCI 600 or EDCI 715. EDCI-717-0-0830

EDCI 719. Economic Education Workshop. (3) S. Basic economic concepts and how to integrate them into elementary and secondary curriculums and an examination of recent economic education materials. Pr.: Consent of instructor. EDCI-719-0-0801

EDCI 730. Education of the Disadvantaged. (3) On sufficient demand. Consideration of the life-space of the disadvantaged learner and its relationship to curriculum, organization, and inter-personal relationships in schools. The development of realistic, relevant goals for the teacher of the disadvantaged. Pr.: EDAF 611 or consent of instructor. EDCI-730-0-0813

EDCI 735. Improving Elementary Science Teaching. (3) I, II. Evaluation and implementation of psychological and philosophical foundations will be stressed in improving elementary science teaching. Recent materials will be compared and their unique and common elements examined. Pr.: Teaching experience and/or consent of instructor. EDCI-735-1-0834

EDCI 737. Drug Abuse Education. (3) On sufficient demand. Emphasis on the development of effective drug abuse education programs with attention given to the role delineation for schools and teachers. Materials and procedures for developing values and attitudes in an education setting. Pr.: Senior standing and consent of instructor. EDCI-737-0-0801

EDCI 739. Environmental Education. (1-3) I, II, S. The selection, adaptation, and development of environmental education K-12 curriculum materials; procedures for an integrated curricular implementation; the selection of appropriate instructional strategies. Pr.: EDAF 302, a course in environmental studies and/or consent of instructor. EDCI-739-0-0801

EDCI 756. Instructional Communication Processes. (3) I, S. Processing of information via the auditory and visual perceptual systems and implications for the design and utilization of instructional technology. Pr.: Consent of instructor. EDCI-756-0-0801

EDCI 760. Educational Technology. (2 or 3) I, II, S. Principles and techniques in the use of visual and audio-visual materials; operation and maintenance of equipment and sources of supply. Pr.: Completion of student teaching or graduate standing. EDCI-760-1-0801

EDCI 765. Planning and Developing Instructional Materials. (3) On sufficient demand. The principles and processes involved in planning and producing instructional materials, ranging from the preparation of simple graphic and photographic materials to computer-assisted programmed instruction. Pr.: EDCI 760 or consent of instructor. EDCI-765-1-0801

EDCI 779. Primary School Education. (3) I, II. A course for those interested in the kindergarten and primary school child. Emphasis will be placed on curriculum development, pertinent research, and innovative practices in early education. Pr.: EDAF 315 and/or consent of instructor. EDCI-779-0-0823

EDCI 780. Kindergarten Education. (3) S. A specialized study of the kindergarten in the American school: methods and materials for working with the kindergarten child, including communication and explanation skills and readiness for reading. Pr.: EDAF 215, EDCI 300, and junior standing. EDCI-780-0-0823

EDCI 795. Problems in Curriculum and Instruction. (Var.) I, II, S. Independent study of a specific problem in curriculum or instruction. Pr.: Consent of instructor. EDCI-795-3-0823

Graduate credit

EDCI 803. Curriculum Development. (3) I, II, S. An overall view of the entire school curriculum, patterns of organization, outlining of instructional fields, and specific helps in curriculum development for administrators and classroom teachers. Pr.: Twelve hours of education or consent of instructor. EDCI-803-0-0829

EDCI 805. Curriculum Construction for Elementary and Secondary Schools. (2 or 3) On sufficient demand. Procedures for organizing and conducting programs for curriculum im-

provement in the elementary and secondary schools; techniques for the development and evaluation of curriculum materials. Opportunity is provided for work on individual curriculum problems. Pr.: EDCI 803. EDCI-805-0-0829

EDCI 808. Curriculum in the Inner City. (3) I, II. Exploration of research and innovations in curriculum and instruction for inner city schools. Emphasis placed on curricular and instructional difficulties in low-income communities and on productive compensatory educational practices. Pr.: EDCI 803 and/or consent of instructor. EDCI-808-0-0801

EDCI 810. Multi-Cultural Curriculum Programming. (3) I, S. Application of multi-cultural curriculum principles to total school programming with particular emphasis on the cultural pluralism phenomenon. Includes analytic review of instruments on multi-cultural/multi-racial curriculum evaluation as well as planning skills for equitable thrusts. Primarily involves elementary and secondary focus with some attention to post-secondary programming. Pr.: EDCI 803 or EDCI 808 or equiv. EDCI-810-0-0829

EDCI 820. Trends in Elementary School Language Arts. (3) On sufficient demand. An analysis of current methods, issues, and trends in teaching, speaking, listening, and writing through the study of significant literature and research findings. Pr.: Teaching experience or consent of instructor. EDCI-820-0-0802

EDCI 821. Contemporary Mathematics Education in the Elementary School. (3) On sufficient demand. Advanced study of selected topics in elementary school mathematics emphasizing new programs, trends, controversial topics, and new recommendations for persistent problems; findings of recent research stressed. Pr.: Teaching experience or consent of instructor. EDCI-821-0-0833

EDCI 822. Trends in Elementary School Social Studies. (3) On sufficient demand. Current methods, materials, issues, and trends in developing social consciousness among elementary school children. Social science strategies usable by children. Pr.: Teaching experience or consent of instructor. EDCI-822-0-0802

EDCI 825. Creative Language Expression in the Elementary School. (3) II. On sufficient demand. Developing experiences in creative expression as part of the elementary school English language arts program; role of the arts in fostering creative language expression, strategies for teaching and evaluating creative writing and dramatic arts. Pr.: EDCI 471. EDCI-825-0-0802

EDCI 831. Leadership for Improved Instruction. (3) II, S. A consideration of the relationship and techniques involved when teachers, supervisors, and administrators plan and implement improvement of instruction. Pr.: EDCI 585 or 586 or EDAO 680. EDCI-831-0-0801

EDCI 832. Individualized Instructional Programs. (3) On sufficient demand. A study of the rationale, procedures, techniques, and materials which are appropriate and necessary to individualizing instructional programs. Particular emphasis given to organizational structure, curriculum, and administration of non-graded, multi-graded, and multi-tracked programs. Pr.: Teaching experience or consent of instructor. EDCI-832-0-0801

EDCI 833. Creativity in Education. (3) II, S. Clarification of creativity in education, discovery of creative talent, methods of encouraging creative talent; emphasis on learning models and research in creativity as compared with or contrasted with conformity; emphasis on divergent and convergent thinking and its role in creative teaching with major consideration given to the student's involvement in creative study and/or teaching. Pr.: Teaching experience or consent of instructor. EDCI-833-0-0801

EDCI 835. Supervision of Student Teaching. (3) On sufficient demand. Organization and functions of student teaching programs; orienting, supervising, and evaluating student teachers in elementary and secondary schools. Pr.: Teaching experience and consent of instructor. EDCI-835-0-0801

EDCI 842. Directed Professional Development. (5) I, II. Research and teaching under supervision in the secondary school. Open only to outstanding liberal arts graduates enrolled in the special program for the professional preparation of such graduates for teaching in critical areas in secondary schools. Pr.: Registration in Graduate School and consent of instructor. EDCI-842-0-0803

EDCI 843. Principles of College Teaching. (3) I, II. Overview of principles of learning, learning theory, educational objectives, methods and techniques, college students, and evaluation in the classroom. Emphasis upon pre-service and in-service help in improving instruction at the college level. Pr.: Consent of instructor. EDCI-843-0-0805

EDCI 84r. Current Issues in College Teaching. (2) II. Attention given to objectives, problems, and evaluation of college instruction, purpose of the university, creative teaching, student involvement and unrest, and current issues. Individual study of special interest topics. Pr.: EDCI 843 and consent of instructor. EDCI-844-0-0805

EDCI 845. Advanced Elementary School Reading. (3) On sufficient demand. A study and evaluation of selected theories, programs, practices, and materials, K-6, emphasizing current trends, issues, and problems. Pr.: EDCI 474 or consent of instructor. EDCI-845-1-0830

EDCI 846. Diagnosis and Treatment of Reading Disabilities. (3 or 4) I, S. A systematic study of the causes of reading problems, the use and interpretation of diagnostic instruments and procedures, and special materials and methods of remedial instruction. Includes diagnosis of a child with a reading problem. Pr.: EDCI 715 or 845 and teaching experience or consent of instructor. EDCI-846-3-0817

EDCI 847. Clinical Practices in Reading. (3) II, S. Supervised experience in diagnosing and teaching children with reading problems. Pr.: EDCI 846. EDCI-847-1-0817

EDCI 848. Organization and Administration of Reading Programs. (2) II, S. An investigation of several topics of special interest to educators responsible for developing a total reading program, K-12, with special attention to the remedial reading program. Pr.: EDCI 715 or 845 or consent of instructor. EDCI-848-0-0817

EDCI 860. Educational Media Programs. (3) On sufficient demand. Organization, administration, and evaluation of educational media service programs, with emphasis on the provision of services, materials, equipment, facilities, staff, and financial resources essential in support of modern instructional programs. Includes studies of programs in varying sizes and types of educational institutions. Pr.: EDCI 760 or consent of instructor. EDCI-860-0-0801

EDCI 864. Programmed Instructional Materials. (3) On sufficient demand. Design, testing, and instructional applications of programmed instructional materials, teaching machines, and automated systems of instruction with emphasis on multi-media formats. Pr.: EDCI 760 and EDAF 920 or consent of instructor. EDCI-864-1-0829

EDCI 866. Selecting and Evaluating Instructional Materials. (3) On sufficient demand. Principles and procedures for evaluating graphic, photographic, and audio instructional materials. Development of evaluative criteria, instruments, and utilization guides. Sources for selecting instructional materials. Pr.: EDCI 760 or consent of instructor. EDCI-866-1-0829

EDCI 872. Advanced Study of the Reading Process. (3) On sufficient demand. Survey of selected theories of the reading process. Investigation of the interrelationships of the reading act: cognitive processes; language; social-emotional factors, and experience. Emphasis upon recent developments in the field. Pr.: EDCI 845, EDCI 715, or consent of instructor. EDCI-872-0-0830

EDCI 873. The Science Curriculum. (3) On sufficient demand. National curriculum programs and projects at both elementary and secondary levels. Evaluation of appropriateness of content as it relates to a philosophy of science education. Modes for investigating scientific phenomena and their subsequent use in teaching the processes of the scientists. Pr.: EDCI 803 and consent of instructor. EDCI-873-0-0834

EDCI 874. The Mathematics Curriculum. (3) On sufficient demand. Trends in the teaching and supervision of mathematics. Analysis of literature and research relating to content, methods, and materials of mathematics education. Pr.: EDCI 803, experience teaching mathematics, and consent of instructor. EDCI-874-0-0833

EDCI 875. The Language Arts Curriculum. (3) On sufficient demand. The changing scene in the teaching of English: trends, materials, and ideas in literature, composition, and grammar that have emerged from recent research and discovery. Pr.: EDCI 803 and consent of instructor. EDCI-875-0-0801

EDCI 876. The Social Studies Curriculum in the Secondary School. (3) On sufficient demand. New trends, materials, and ideas in teaching the social sciences, based on recent research and experimental programs. Pr.: EDCI 803 and/or consent of instructor. EDCI-876-0-0803

EDCI 877. The Foreign Language Curriculum. (3) On sufficient demand. New trends and materials in teaching the foreign languages, based on recent research and experimental programs. Pr.: EDCI 803 and consent of instructor. EDCI-877-0-0829

EDCI 879. Community/Junior College Curriculum. (3) II. Evaluation of community/junior college curricula, reasons for revision, aims and objectives. Designed to familiarize students with the entire curricular offerings of the comprehensive community/junior college. Pr.: EDAF 832. EDCI-879-0-0806

EDCI 880. The Curriculum Information Consultant. (3) II, S. The process skills and knowledge needed for the retrieval and dissemination of curriculum information. Designed for teachers and administrators involved with helping others in curriculum development. Pr.: EDCI 803, or EDCI 808 or EDCI 879. EDCI-880-0-0829

EDCI 882. Teacher Self-Assessment. (3) I, II, S. This course includes a systematic study of how teachers can improve their instruction in an autonomous fashion (K-12 and higher education). Major topics include: videotape recording, verbal and nonverbal cues, means-referenced objectives, observation tools, student feedback instruments, and peer feedback. Designed for teachers, administrators, and supervisors interested in improving or assisting people in improving their instruction. Pr.: EDCI 803 or EDCI 843. EDCI-882-0-0829

EDCI 884. Computer Applications in Education. (3) On sufficient demand. The effects of information retrieval systems, data processing, and computer assisted instruction on the curriculum, instruction, and administration of educational institutions. Pr.: Educational experience and consent of instructor. EDCI-884-1-0801

EDCI 886. Seminars in Curriculum & Instruction. (Var.) On sufficient demand. These seminars will consider research in the several fields of education represented in terms of the special interests of the students. Pr.: Consent of instructor. EDCI-886-0-0829

EDCI 898. Master's Report. (Var.) I, II, S. Pr.: Consent of instructor. EDCI-898-3-0829

EDCI 899. Master's Research. (Var.) I, II, S. Pr.: Consent of instructor. EDCI-899-3-0829

EDCI 907. Curriculum Theory. (3) On sufficient demand. Theoretical concepts underlying significant curriculum developments. A systematic critique of current curricular theory. Consideration of model generation. Pr.: EDCI 804 or 811 and consent of instructor. EDCI-907-0-0829

EDCI 908. Instructional Theory. (3) On sufficient demand. Comprehensive analysis of research on the teaching process. Theoretical models for understanding teacher-pupil interaction. The design of studies on factors affecting teacher behavior and classroom learning. Pr.: EDCI 831, EDAF 920, and consent of instructor. EDCI-908-0-0829

EDCI 990. Internship in College Teaching. (2-6) On sufficient demand. An experiential course for graduate students devoted to improving instruction. Supervised teaching of college classes and seminars in conjunction with cooperating departments. Pr.: Master's degree, EDCI 844, and consent of department head. EDCI-990-2-0805

EDCI 991. Internship in Curriculum and Instruction. (Var.) On sufficient demand. Studies of and field experiences in the development of programs in cooperating schools and educational or related agencies under the supervision of College of Education graduate faculty members. A maximum of six credit hours may be chosen from the areas listed. Pr.: Consent of instructor. EDCI-991-2-0829

EDCI 999. Research in Curriculum and Instruction. (Var.) I, II, S. Pr.: EDAF 817 and/or consent of instructor. EDCI-999-4-0829

College of Engineering

AHMED, NASIR, Adjunct Prof. of Electrical Engineering (1968). BS 1961, Univ. Col. of Engineering, Bangalore, India; MS 1963, PhD 1966, Univ. of N.M. (GF)

AKINS, RICHARD GLENN, Prof. of Chemical Engineering (1963). BS 1957, MS 1958, Univ. of Louisville; PhD 1962, Northwestern Univ. (GF)

APPL, FREDRIC CARL, Prof. of Mechanical Engineering (1960). BS 1954, MS 1955, PhD 1958, Carnegie Mellon Univ. (GF)

AZER, NAIM ZAKI, Prof. of Mechanical Engineering; Assoc., Institute for Environmental Research (1958). BS 1950, MS 1954, Univ. of Alexandria, Egypt; PhD 1959, Univ. of Ill. (GF)

BALL, HERBERT DEAN, Assoc. Prof. of Mechanical Engineering (1958). BS 1952, MS 1958, Univ. of Neb.; PhD 1972, Kan. St. Univ. (GF)

BARNES, PHILIP L., Asst. Prof. of Agricultural Engineering (1980). BS 1974, Univ. of Wyo.; MS 1977, PhD 1980, Tex. A&M Univ.

BATES, HERBERT TEMPLETON, Prof. of Chemical Engineering Emeritus (1958). BS 1935, Iowa St. Univ.; MS 1938, Va. Polytechnic Inst.; PhD 1941, Iowa St. Univ. Professional Engineer, 1959.

BAUGHER, EARL EUGENE, Assoc. Prof. of Agricultural Engineering (1967). BS 1958, MS 1964, Kan. St. Univ.

BECK, B. TERRY, Assoc. Prof. of Mechanical Engineering (1979). BS 1971, MS 1974, PhD 1978, Oakland Univ. (GF)

BENNETT, CORWIN A., Prof. of Industrial Engineering; Assoc., Institute for Environmental Research (1970). BS 1950, Iowa St. Univ.; MA 1951, PhD 1954, Univ. of Neb.; Certified Psychologist, N.Y., KS. (GF)

BEST, CECIL HAMILTON, Prof. of Civil Engineering (1961). BS 1955, MS 1956, PhD 1960, Univ. of Calif. Professional Engineer, 1962. (GF)

BISSEY, CHARLES R., Assoc. Prof. of Architectural Engineering and Construction Science (1969). BS 1957, Colo. St. Univ.; MArch 1961, Kan. St. Univ.; Professional Engineer, 1979. (GF)

BLACK, RICHARD D., Assoc. Prof. of Extension Agricultural Engineering (1982). BS 1952, MS 1953, PhD 1961, Univ. of Ill.

BLACKMAN, MERRILL, Assoc. Prof. of Architectural Engineering and Construction Science (1965, 1969). BS in AE 1949, Kan. St. Univ. Registered Architect, 1955. Professional Engineer, 1949.

BRAINARD, BOYD BERTRAND, Prof. of Mechanical Engineering Emeritus (1923). BS 1922, Univ. of Colo.; SM 1931, Mass. Inst. of Tech. Professional Engineer, 1945.

BROWN, JUDITH L., Instr. of Architectural Engineering, Construction Science (1983). BS 1979, Wake Forest Univ.

BURTON, CHARLES L., Assoc. Prof. of Architectural Engineering, Construction Science (1970). BS 1963, Kan. St. Univ.; MS 1975, Kan. Univ. Professional Engineer, Kansas, 1970. (GF)

BYERS, EARLE CONRAD, Asst. Prof. of Industrial Engineering Emeritus (1946). AB 1941, Greenville Col.; MS 1954, Kan. St. Univ.

CHANG, CHENG S., Adjunct Asst. Prof. of Agricultural Engineering (1979). BS 1960, National Taiwan Univ.; MS 1966, Miss. St. Univ.; PhD 1970, N.C. St. Univ. (GF)

CHUNG, DO SUP, Prof. of Agricultural Engineering (1965). BS 1958, Purdue Univ.; MS 1960, PhD 1966, Kan. St. Univ. (GF)

CLACK, ROBERT WYNANDUS, Adjunct Prof. of Nuclear Engineering (1955). BS 1943, U.S. Naval Academy. Professional Engineer, 1956.

CLARK, STANLEY JOE, Prof. of Agricultural Engineering; Ag. Exp. Sta. (1966). BS 1954, MS 1959, Kan. St. Univ.; PhD 1966, Purdue Univ. Professional Engineer, 1969. (GF)

CONVERSE, HARRY, Adjunct Assoc. Prof. in Agricultural Engineering (1971). BS 1946, MS 1947, Kan. St. Univ.

COOPER, PETER B., Prof. of Civil Engineering (1966). BS 1957, MS 1960, PhD 1965, Lehigh Univ. Professional Engineer, 1969. (GF)

CORBIN, WILLIAM B., Instr. of Architectural Engineering, Construction Science (1983). BS 1974, Southern Ill. Univ.

COTTOM, MELVIN CLYDE, Asst. Prof. of Electrical Engineering (1955). BS 1945, MS 1948, Univ. of Kan. Professional Engineer in Kan., 1947; in Mo., 1952. (GF)

CRANK, ROBERT EUGENE, Prof. of Mechanical Engineering (1947). BS 1947, MS 1950, Kan. St. Univ. Professional Engineer, 1949. (GF)

CRARY, JAMES FRED, Asst. Prof. of Civil Engineering Emeritus (1947). BS 1947, Kan. St. Univ.; MS 1969, Okla. St. Univ. Professional Engineer, 1948.

DAHL, ROBERT E., Prof. and Head, Architectural Engineering and Construction Science (1976). BS 1951, MS 1954, Kan. St. Univ. Professional Engineer. (GF)

DAWES, WILLIAM H., Assoc. Prof. of Engineering Technology (1978). BS 1969, MS 1972, PhD 1974, Kan. St. Univ.

DERR, W. GORDON, Instr. of Civil Engineering (1980). MS 1978, Univ. of Tex.

DEVORE, JOHN J., Instr. of Electrical Engineering (1982). BS 1971, MS 1973, Kan. St. Univ.

DOLLAR, JOHN PAUL, Asst. Prof.; Asst. Dean (1960). BS 1956, MS 1966, Kan. St. Univ.

DONNERT, HERMANN JAKOB ANTON, Prof. of Nuclear Engineering (1966). PhD 1951, Leopold-Franzens Univ., Austria. (GF)

DUNCAN, ALLEY H., Prof. of Mechanical Engineering Emeritus (1942). BS 1937, MS 1949, Kan. St. Univ. Professional Engineer, 1948.

DYER, RUTH A., Asst. Prof. of Electrical Engineering (1983). BS 1973, MS 1975, Kan. St. Univ.; PhD 1980, Univ. of Ky.

DYER, STEPHEN A., Asst. Prof. of Electrical Engineering (1983). BS 1973, MS 1974, PhD 1977, Kan. St. Univ.

ECKHOFF, N. DEAN, Prof.; Head, Department of Nuclear Engineering; Dir. of Center for Energy Studies (1961). BS 1961, MS 1963, PhD 1968, Kan. St. Univ. Professional Engineer, 1978. (GF)

ECKHOFF, STEPHEN R., Asst. Prof. of Agricultural Engineering (1983). BS 1975, Ill. Wesleyan Univ.; MS 1977, PhD 1983, Purdue Univ.

EGGEMAN, GEORGE WAYNE, Asst. Prof. of Mechanical Engineering (1978). BS 1962, Univ. of Mo. at Rolla; MS 1968, PhD 1972, Univ. of Ill. at Urbana. Professional Engineer, 1962.

ERICKSON, LARRY EUGENE, Prof. of Chemical Engineering (1964). BS 1960, PhD 1964, Kan. St. Univ. (GF)

FAIRBANKS, GUSTAVE EDMUND, Prof. of Agricultural Engineering Emeritus; Ag. Exp. Sta. (1941). BS 1941, MS 1950, Kan. St. Univ. Professional Engineer, 1948. (GF)

FAN, LIANG-TSENG, Prof.; Head, Department of Chemical Engineering; Dir., Institute for Systems Design and Optimization; Assoc., Institute for Environmental Research (1958). BS 1951, National Taiwan Univ.; MS 1954, Kan. St. Univ.; MS 1958, PhD 1957, West Va. Univ. (GF)

FAW, RICHARD EARL, Prof. of Nuclear Engineering; Dir. of Nuclear Reactor Facility (1962). BS 1959, Univ. of Cincinnati; PhD 1962, Univ. of Minn. Professional Engineer, 1970. (GF)

FLINNER, ARTHUR ORAN, Prof. of Mechanical Engineering Emeritus (1929). BS 1929, MS 1934, Kan. St. Univ.; SM 1937, Mass. Inst. of Technology. Professional Engineer, 1937.

FORSYTH, PENNY J., Res. Asst. (1984). BS 1966, Mich. St. Univ.

FOWLER, EDDIE R., Assoc. Prof. of Electrical Engineering (1962). BS 1957, MS 1965, Kan. St. Univ.; PhD 1969, Okla. St. Univ.

GALLAGHER, RICHARD RAY, Prof. of Electrical Engineering; Assoc., Institute for Environmental Research (1968). BS 1964, MS 1966, PhD 1968, Iowa St. Univ. (GF)

GILLILAND, DON A., Asst. Prof. in Engineering Technology (1979). BS 1977, MS 1982, Kan. St. Univ.

GLASGOW, LARRY A., Asst. Prof. in Chemical Engineering (1978). BS 1972, MS 1974, PhD 1977, Univ. of Mo. at Columbia.

GODDARD, JAMES F., Asst. Prof. of Architectural Engineering and Construction Science (1972). BSBC 1969, Kan. St. Univ.; MS 1972, Univ. of Fla.

GOGOLSKI, JON H., Res. Asst. of Electrical Engineering (1983). BS 1982, Kan. St. Univ.

GOODMAN, ALLAN P., Instr. in Architectural Engineering (1977). BArch 1967, Kan. St. Univ.; Registered Architect, Kansas, 1970.

GORTON, ROBERT LESTER, Prof. of Mechanical Engineering; Assoc., Institute for Environmental Research (1960). BS 1953, La. Polytechnic Inst.; MS 1960, La. St. Univ.; PhD 1966, Kan. St. Univ. Professional Engineer, 1953. (GF)

GROSH, DORIS LLOYD, Assoc. Prof. of Industrial Engineering (1965). BS 1946, Univ. of Chicago; MS 1949, PhD 1969, Kan. St. Univ. (GF)

GROSH, LOUIS E., Prof. of Industrial Engineering (1965). BS 1944, La. St. Univ.; BS 1947, MS 1949, PhD 1954, Purdue Univ. (GF)

HAFT, EVERETT EUGENE, Prof. of Electrical Engineering (1961). BS 1947, MS 1951, PhD 1955, Univ. of Wis. Professional Engineer in Wis., 1952. (GF)

HAGAN, ROBERT C., Adjunct Prof. in Nuclear Engineering (1978). BS 1962, Univ. of Kan.; MS 1970, PhD 1974, Univ. of Va.

HANSEN, CARL ULLMAN, Asst. Prof. of Industrial Engineering Emeritus (1957). BS 1936, Kan. St. Univ.; MS 1961, Univ. of Neb. Professional Engineer, 1961.

HAQUE, EKRAMUL, Asst. Prof. of Agricultural Engineering (1979). BS 1964, Bangladesh Univ. of Engineering and Technology; MS 1969, Purdue Univ.; PhD 1978, Kan. St. Univ. (GF)

HARMS, BRIAN K., Instr. of Electrical Engineering (1982). BS 1980, MS 1981, Kan. St. Univ.

HARNER, JOSEPH P., Asst. Prof. of Agricultural Engineering (1983). BS 1979, MS 1981, PhD 1983, Va. Polytechnic Institute and St. Univ.

HAYTER, RICHARD B., Asst. Prof.; Dir. of Kansas Industrial Extension Service; Dir. of Engineering Extension; Asst. Dir. of Cooperative Extension; Asst. Dir. of Energy Extension (1980). BS 1965, S.D. St. Univ.; MS 1973, PhD 1975, Kan. St. Univ.

HELANDER, LINN, Prof. of Mechanical Engineering Emeritus (1935). BS 1915, Univ. of Ill. Professional Engineer, 1941.

HELD, JON J., Instr. of Mechanical Engineering (1983). MS 1978, Kan. St. Univ.

HIGHTOWER, RAY E., Asst. Prof. of Nuclear Engineering; Asst. to the Dean (1961). BS 1964, Kan. St. Univ.

HOBSON, LELAND STANFORD, Prof. of Mechanical Engineering Emeritus (1946). BS 1927, Kan St. Univ. Professional Engineer, 1946.

HODGES, TEDDY OMAR, Prof. of Architectural Engineering and Construction Science (1959). BS 1950, Tex. A & M; MS 1951, Iowa St. Univ.; PhD 1959, Mich. St. Univ. Professional Engineer in Iowa, 1952; Professional Engineer, 1974. (GF)

HOLMES, ELWYN SPRUIELL, Prof. of Extension Agricultural Engineering Emeritus (1966). BS 1943, MS 1953, Tex. A & M Univ.

HONSTEAD, WILLIAM HENRY, Prof. of Chemical Engineering Emeritus; Dir., Executive Vice Pres., Kan. St. Univ. Research Foundation (1943). BS 1939, MS 1946, Kan. St. Univ.; PhD 1956, Iowa St. Univ. Professional Engineer, 1948. (GF)

HU, KUO-KUANG, Assoc. Prof. of Civil Engineering (1968). Graduation, 1956, Taiwan Provincial Taipei Inst. of Tech.; MS 1966, PhD 1969, Kan. St. Univ. (GF)

HUANG, CHI-LUNG, Prof. of Mechanical Engineering (1964). BS 1954, National Taiwan Univ.; MS 1960, Univ. of Ill.; Doctor of Engineering 1964, Yale Univ. (GF)

HUMMEL, KAREN J., Instr.; Dir. of Engineering Women's Program (1977). BS 1965, Kan. St. Univ.

HUMMELS, DONALD RAY, Prof. and Head of Electrical Engineering (1970). BS 1967, MS 1968, PhD 1969, Ariz. St. Univ. (GF)

HUNT, ORVILLE DON, Prof. of Electrical Engineering Emeritus (1923). BS 1923, Wash. St. Univ.; MS 1930, Kan. St. Univ. Professional Engineer, 1947.

HWANG, CHING-LAI, Prof. of Industrial Engineering; Assoc., Institute for Environmental Research (1964). BS 1953, National Taiwan Univ.; MS 1960, PhD 1962, Kan. St. Univ. (GF)

JEPSEN, RICHARD LOUIS, Prof. of Extension Agricultural Engineering (1963). BS 1950, MS 1963, Kan. St. Univ.; EEd 1974, N.C. St. Univ.

JOHNSON, GARY LEE, Assoc. Prof. of Electrical Engineering (1966). BS 1961, MS 1963, Kan. St. Univ.; PhD 1966, Okla. St. Univ. Professional Engineer, 1973. (GF)

JOHNSON, WILLIAM H., Prof., Department of Agricultural Engineering; Dir., Engineering Experiment Station (1970). BS Agriculture, BS Agricultural Engineering 1948, MS 1953, Ohio St. Univ.; PhD 1960, Mich. St. Univ. Professional Engineer in Ohio, 1970. (GF)

JOHNSTON, KENNETH K., Instr. of Architectural Engineering, Construction Science (1983). BS 1961, Kan. St. Univ.

JONES, BYRON WAYNE, Assoc. Prof. of Mechanical Engineering (1978). BS 1971, Kan. St. Univ.; MS 1973, PhD 1975, Okla. St. Univ. Professional Engineer, 1977. (GF)

JUNG, MOO-YOUNG, Instr. of Industrial Engineering (1984). BS 1972, Korea; MS 1981, Kan. St. Univ.

KIPP, JOHN EDWARD, Prof. of Mechanical Engineering; Assoc., Institute for Environmental Research (1959). BS 1951, MS 1955, Univ. of Kan.; PhD 1968, Okla. St. Univ. Professional Engineer, 1960. (GF)

KIRMSER, PHILIP GEORGE, Prof. of Mathematics; Prof. of Engineering (1942). BS 1939, MS 1944, PhD 1958, Univ. of Minn. Professional Engineer, 1961. (GF)

KNOSTMAN, HARRY DANIEL, Assoc. Prof. of Civil Engineering (1957). BS 1955, MS 1961, Kan. St. Univ.; PhD 1966, Univ. of Colo. Professional Engineer, 1959. (GF)

KOELLIKER, JAMES K., Prof. of Civil Engineering (1973). BS 1967, Kan. St. Univ.; MS 1969, PhD 1972, Iowa St. Univ. Professional Engineer, 1972. (GF)

KOEPSEL, WELLINGTON WESLEY, Prof. of Electrical Engineering (1964). BS 1944, MS 1951, Univ. of Tex.; PhD 1960, Okla. St. Univ. Professional Engineer in Tex., 1952. Professional Engineer in Kansas, 1974. (GF)

KONZ, STEPHAN ANTHONY, Prof. of Industrial Engineering; Assoc., Institute for Environmental Research (1964). BS 1956, MBA 1956, Univ. of Mich.; MS 1960, St. Univ. of Iowa; PhD 1964, Univ. of Ill. (GF)

KOONTZ, JOHN J., Asst. Instr. of Civil Engineering (1982). BS 1971, West Point.

KUHLMAN, DENNIS K., Asst. Prof. of Extension Agricultural Engineering (1976). BS 1970, MS 1975, Kan. St. Univ. Professional Engineer, 1981.

KYLE, BENJAMIN GAYLE, Prof. of Chemical Engineering (1958). BS 1950, Ga. Inst. of Tech.; MS 1955, PhD 1958, Univ. of Fla. (GF)

LAI, FANG-SHYONG, Assoc. Prof. of Chemical Engineering (1975). BS 1965, National Taiwan Univ.; MS 1966, Univ. of Notre Dame; PhD 1974, Kan. St. Univ. (GF)

LARSON, GEORGE HERBERT, Prof. of Agricultural Engineering; Ag. Exp. Sta. (1939). BS 1939, MS 1940, Kan. St. Univ.; PhD 1955, Mich. St. Univ. Professional Engineer, 1947. (GF)

LEE, E. STANLEY, Prof. of Industrial Engineering (1966). BS 1953, Ordnance Engineering Col., China; MS 1957, N.C. St. Col.; PhD 1962, Princeton Univ. (GF)

LENHERT, DONALD HOWARD, Prof. of Electrical Engineering (1966). BS 1956, Kan. St. Univ.; MS 1958, Syracuse Univ.; PhD 1966, Univ. of N.M.; Professional Engineer, 1973. (GF)

LINDHOLM, JOHN C., Prof. and Head, Department of Engineering Technology; Prof. of Mechanical Engineering (1960). BS 1949, Kan. St. Univ.; MS 1957, Univ. of Kan.; PhD 1961, Purdue Univ. Professional Engineer, 1954. (GF)

LINDLY, EDWIN CURGUS, Prof. of Civil Engineering and Architectural Engineering (1949). BS 1942, Okla. St. Univ.; MS 1949, Purdue Univ.; MS 1957, Kan. St. Univ.; PhD 1964, Iowa St. Univ. Professional Engineer, 1950. (GF)

LINDLY, JAY K., Instr. of Civil Engineering (1984). BS 1976, MS 1977, Kan. St. Univ.

LIPPER, RALPH IDEN, Prof. of Agricultural Engineering Emeritus; Ag. Exp. Sta. (1964). BS 1941, MS 1950, Kan. St. Univ. Professional Engineer, 1953. (GF)

LOONEY, MICHAEL C., Instr.; Video Specialist (1983). AA 1976, Dodge City Comm. Col.

LUCAS, MICHAEL S.P., Prof. of Electrical Engineering (1968). MS 1962, PhD 1964, Duke Univ. (GF)

MANGES, HARRY LEO, Prof. of Agricultural Engineering; Ag. Exp. Sta. (1956). BS 1949, MS 1959, Kan. St. Univ.; PhD 1969, Okla. St. Univ. Professional Engineer, 1960. (GF)

MATHEWS, ALEXANDER P., Asst. Prof. of Civil Engineering (1979). BS 1966, Univ. of Madras-India; MS 1968, Univ. of RI, Kingston; PhD 1975, Univ. of Mich., Ann Arbor; Professional Engineer, 1977.

MATTHEWS, JOHN CARTER, Prof. of Chemical Engineering (1962). BS 1959, DSc 1965, Wash. Univ. (GF)

MAYO, MICHAEL G., Instr. in Architectural Engineering and Construction Science (1981). BArch 1977, MBA 1979, Kan. St. Univ. Registered Architect, 1980.

McCORMICK, FRANK JAMES, Prof. of Civil Engineering Emeritus (1939). BS 1927, MS 1931, Iowa St. Univ. Professional Engineer, 1944.

McENROE, BRUCE M., Asst. Prof. of Civil Engineering (1983). BS 1976, Univ. of Kan.; MS 1978, Univ. of Iowa; PhD 1982, Univ. of Kan.

MERKLIN, JOSEPH FREDERICK, Prof. of Nuclear Engineering (1967). BS 1957, Manhattan Col. of N.Y.; PhD 1963, Univ. of Minn. (GF)

MESSENHEIMER, ALVA ERNEST, Assoc. Prof. of Mechanical Engineering Emeritus (1942). BS 1924, Kan. St. Univ. Professional Engineer, 1948.

MIGNANO, BRUCE P., Instr. of Industrial Engineering (1983). BS 1958, West Point; MS 1962, Steven Institute of Technology; MS 1980, Kan. St. Univ.

MILLER, PAUL LEROY, Prof. and Head, Department of Mechanical Engineering; Assoc., Institute for Environmental Research (1958). BS 1957, MS 1961, Kan. St. Univ.; PhD 1966, Okla. St. Univ. Professional Engineer, 1962. (GF)

MILLER, RICHARD L., Res. Assoc., Enginering Exp. Sta. (1981). MS 1972, Okla. St. Univ.

MORSE, REED FRANKLIN, Prof. of Civil Engineering Emeritus (1923). BA 1921, Cornell Col.; BS 1923, Iowa St. Univ.; MS 1933, Kan. St. Univ.; PhD 1941, Cornell Univ. Professional Engineer, 1939.

MUNGER, HAROLD HAWLEY, Assoc. Prof. of Applied Mechanics Emeritus (1939). BS 1939, MS 1941, Kan. St. Univ. Professional Engineer, 1941.

MURPHY, JAMES PATRICK, Assoc. Prof. of Extension Agricultural Engineering, State Leader (1979). BS 1968, MS 1970, Kan. St. Univ. Professional Engineer, 1972.

NESMITH, DWIGHT ALVIN, Assoc. Prof. of Mechanical Engineering Emeritus (1948). BS 1948, Northwestern Univ.; MS 1952, Kan. St. Univ. Professional Engineer, 1962.

OARD, DARRELL L., Res. Asst. of Agricultural Engineering (1972). BS 1968, Emporia St. Univ.

PACEY, DAVID A., Asst. Prof. of Extension Agricultural Engineering (1978). BS 1974, MS 1979, Kan. St. Univ. Professional Engineer, 1981.

PAHWA, ANIL, Asst. Prof. of Electrical Engineering (1983). BS 1975, Berla Institute of Technology; MS, Univ. of Maine; PhD 1983, Univ. of Tex.

PAULI, ROSS IRWIN, Asst. Prof. of Mechanical Engineering Emeritus (1947). BA 1941, Westmar Col.; MS 1947, Pittsburg St. Univ.

POWELL, G. MORGAN, Asst. Prof., Natural Resource Engineer, Extension Agricultural Engineering (1977). BS 1965, Kan. St. Univ.; MS 1967, Univ. of Mo.; PhD 1973, Utah St. Univ.

RASURE, JOHN R., Instr. of Electrical Engineering (1984). BS 1981, Kan. St. Univ.; MS 1982, Stanford Univ.

RATHBONE, DONALD E., Dean; Prof. of Electrical Engineering (1973). BS 1951, Purdue Univ.; MS 1956, Northwestern Univ.; PhD 1962, Univ. of Pittsburgh. (GF)

ROBBINS, FRANCIS V., Instr. of Agricultural Engineering (1980). BS 1976, Kan. St. Univ.

ROBINSON, M. JOHN, Adjunct Prof. in Nuclear Engineering (1978). BS 1960, MS 1962, PhD 1965, Univ. of Mich.

ROHLES, FREDERICK HENRY, JR., Prof. of Psychology; Dir., Institute for Environmental Research (1963). BS 1942, Roosevelt Univ.; MA 1949, PhD 1956, Univ. of Tex. (GF)

ROSEBRAUGH, VERNON HART, Prof. of Civil Engineering Emeritus (1953). BS 1933, Ore. Inst. of Tech.; BS 1938, Ore. St. Univ.; MA 1952, Univ. of Portland; CE 1956, Ore. St. Univ. Professional Engineer, 1954.

ROTH, THOMAS A., Assoc. Prof. of Chemical Engineering (1965). BS 1960, MS 1961, PhD 1967, Univ. of Wis. (GF)

RUSSELL, EUGENE R., Prof. of Civil Engineering (1974). BSCE 1958, Univ. of Mo., Rolla; MS 1965, Iowa St. Univ.; PhD 1974, Purdue Univ. Professional Engineer, 1962. (GF)

RYS, ANDRZEJ, Asst. Prof. of Electrical Engineering (1983). BS 1976, MS 1976, Technical Univ. of Wroclan, Poland; PhD 1983, Tex. Tech. Univ.

SCHERER, MATHIAS A., Instr. of Civil Engineering (1983). BS 1976, BS 1979, MS 1983, Kan. St. Univ.

SCHLUP, JOHN R., Asst. Prof. of Chemical Engineering (1983). BS 1975, Kan. St. Univ.; PhD 1981, Calif. Inst. of Tech.

SCHROCK, MARK DAVID, Asst. Prof. of Agricultural Engineering (1973). BS 1969, Kan. St. Univ.; MS 1971, Univ. of Ill.; PhD 1978, Kan. St. Univ.

SCHWARZ, MICHAEL D., Res. Asst. of Agricultural Engineering (1979). BS 1973, Kan. St. Univ.

SHULTIS, J. KENNETH, Prof. of Nuclear Engineering (1969). BASc 1964, Univ. of Toronto; MS 1965, PhD 1968, Univ. of Mich. (GF)

SIMONS, GALE G., Prof. of Nuclear Engineering; Dir. of Neutron Activation Analysis Laboratory (1977). BS 1962, MS 1965, PhD 1969, Kan. St. Univ. (GF)

SINGH, RAJENDRA, Assoc. Prof. of Electrical Engineering (1980). BS 1975, Indian Inst. of Tech.; MS 1977, Univ. of Me.; PhD 1980, Southern Methodist Univ.

SINHA, SUBHASH C., Assoc. Prof. of Mechanical Engineering (1977). BS 1968, Bihar Inst. of Tech.; MS 1972, Indian Inst. of Sc.; PhD 1977, Wayne St. Univ. (GF)

SMALTZ, JACOB JAY, Prof. of Industrial Engineering (1939). BS 1939, Bradley Polytechnic Inst.; MS 1946, Kan. St. Univ. Professional Engineer, 1960. Certified Safety Professional, 1973. (GF)

SMITH, BOB LEE, Prof. of Civil Engineering (1948). BS 1948, MS 1953, Kan. St. Univ.; PhD 1963, Purdue Univ. Professional Engineer, 1953. (GF)

SNELL, ROBERT ROSS, Prof. and Head, Civil Engineering (1957). BS 1954, MS 1960, Kan. St. Univ.; PhD 1963, Purdue Univ. Professional Engineer, 1959. (GF)

SPAULDING, GREGORY L., Instr. of Engineering Technology (1983). BS 1980, Kan. St. Univ.

SPILLMAN, CHARLES KENNARD, Prof. and Head of Agricultural Engineering; Ag. Exp. Sta. (1969). AS 1958, Vincennes Univ.; BS 1960, MS 1963, Univ. of Ill.; PhD 1968, Purdue Univ. (GF)

STARK, CAROLEE A., Instr.; Engineering News Editor (1980). BJ 1971, Univ. of Mo.; MS 1978, Kan. St. Univ.

STEICHEN, JAMES M., Assoc. Prof. of Agricultural Engineering; Ag. Exp. Sta. (1978). BS 1970, PhD 1974, Okla. St. Univ. Professional Engineer. (GF)

STEVENSON, PAUL NELSON, Assoc. Prof. of Agricultural Engineering (1957). BS 1948, Univ. of Mo.; MS 1957, Iowa St. Univ. (GF)

SWARTZ, STUART ENDSLEY, Prof. of Civil Engineering (1968). BS 1959, MS 1962, PhD 1968, Ill. Inst. of Tech. Professional Engineer, 1970. (GF)

TENEYCK, GEORGE ROBERT, Assoc. Prof. of Agricultural Engineering; Superintendent, Sandyland Experiment Field (1964). BS 1951, MS 1970, Kan. St. Univ.

THOMPSON, J. GARTH, Prof. of Mechanical Engineering (1971). BS 1960, Brigham Young Univ.; MS 1962, PhD 1967, Purdue Univ. (GF)

TILLMAN, FRANK AUBREY, Prof. and Head, Department of Industrial Engineering; Assoc. Dir., Institute for Systems Design and Optimization (1965). BS 1960, MS 1961, Univ. of Mo.; PhD 1965, St. Univ. of Iowa. (GF)

TRIPP, WILSON, Prof. of Mechanical Engineering Emeritus (1936). BS 1930, MS 1933, Univ. of Calif.; PhD 1956, Univ. of Ill. Professional Engineer, 1946.

TURNQUIST, RALPH OTTO, Prof. of Mechanical Engineering (1959). BS 1952, MS 1961, Kan. St. Univ.; PhD 1965, Case Inst. of Tech. (GF)

VAITHIANATHAN, MUTHURAJ, Asst. Prof. of Industrial Engineering (1981). BS 1975, India; MS 1978, PhD 1981, Iowa St. Univ.

VAUGHAN, ARTHUR R., Assoc. Prof. of Engineering Technology (1977). BS 1967, MS 1971, Univ. of Wis.

WAKABAYASHI, ISAAC, Instr. in Electrical Engineering (1955). BS 1954, Univ. of Calif.

WALAWENDER, WALTER P., Prof. of Chemical Engineering (1969). BA 1963, Utica Col. of Syracuse Univ.; MS 1967, PhD 1969, Syracuse Univ. (GF)

WALKER, HUGH SANDERS, Prof. of Mechanical Engineering; Assoc. Dir., Institute of Computational Research in Engineering (1964). BS 1957, MS 1960, La. St. Univ.; PhD 1965, Kan. St. Univ. Professional Engineer, Louisiana 1958, Kansas 1975. (GF)

WARD, JOSEPH EVANS, JR., Prof. of Electrical Engineering Emeritus (1940). BS 1937, The Univ. of Tex.; MS 1940, Univ. of Ill. Professional Engineer, 1948. (GF)

WARD, STANLEY L., Instr. of Agricultural Engineering (1983). BS 1968, Drury Col.; MS 1981, Kan. St. Univ.

WELTY, ROBERT E., Instr. of Extension Agricultural Engineering (1980). BS 1971, MS 1979, Kan. St. Univ.

WENDLING, LEO THEODORE, Prof. of Extension Agricultural Engineering Emeritus (1947). State Leader 1969; BS 1947, MS 1956, Kan. St. Univ.

WILLEMS, A.E., Assoc. Prof. of Industrial Engineering (1979). BS 1950, McPherson Col.; MS 1962, Kan. St. Univ.; EdD 1970, Utah St. Univ.

WILLIAMS, WAYNE WATSON, Prof. of Civil Engineering (1965). BS 1951, MS 1953, Iowa St. Univ. Professional Engineer.(GF)

WILSON, C. CARL, Assoc. Prof. of Industrial Engineering (1977). BS 1959, Univ. of Toronto; MS 1962, 1965, Univ. of Mich.; Professional Engineer, 1960, Toronto.

WOOD, JOE NATE, Prof. of Mechanical Engineering Emeritus (1936). BS 1936, St. Univ. of Iowa. Professional Engineer, 1948.

Engineering

Donald E. Rathbone, dean
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A course of study leading to a degree in the College of Engineering provides a well-rounded university education and it equips the student with a broad theoretical and practical background to meet the new and demanding problems of our technological society.

All programs in the College of Engineering are fully accredited by the appropriate agencies.

The College of Engineering offers the bachelor of science degree in each of the following fields: agricultural engineering, architectural engineering, chemical engineering, civil engineering, construction science, electrical engineering, engineering technology, industrial engineering, mechanical engineering, nuclear engineering.

The master of science degree is offered in each of the preceding areas except architectural engineering, construction science, and engineering technology.

To provide the engineering graduate student with maximum access to all of its resources, (including faculty and laboratories), the College of Engineering offers the Ph.D. degree in engineering. The student may study in one of the traditional areas or develop a program of study to fit particular interests and needs. Major areas are: agricultural engineering, chemical engineering, civil engineering, electrical engineering, industrial engineering, mechanical engineering, nuclear engineering, systems engineering, materials science, energy processes, bioenvironmental engineering, information processing.

Additional information on the graduate program is included in the section on the Graduate School.

General Requirements

General engineering (DEN)

Entering freshmen who are undecided as to a major in engineering may enroll in general engineering for one year. They will take the following program of study, which is completely applicable to all engineering programs.

Fall semester	Course	Sem. hrs.
ENGL 100	English Composition I	3
CHM 210	Chemistry I	4
MATH 220	Analytic Geometry & Calculus I	4
DEN 160	Engineering Concepts	2
	Humanities or social science electives	3
PE 101	Concepts in Physical Education	1
		17

Spring semester	Course	Sem. hrs.
ENGL 120	English Composition II	3
	or	
	Humanities or social science electives*	3
CHM 230	Chemistry II	4
MATH 221	Analytic Geometry & Calculus II	4
ECON 110	Economics I	3
	Humanities or social science electives	3
		17

*English Composition II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from English Composition I.

Pre-engineering or transfer students

Many of the fundamental courses required for a degree in engineering may be obtained through pre-engineering programs at other four-year institutions or at community colleges. In general, two years of coursework will be transferable. However, there are small differences among the curricula; students electing this route should work closely with their advisors and KSU to ensure a proper selection of courses. Questions should be referred to the dean's office, College of Engineering. The following chart indicates the number of transferable credit hours for various courses, and is a guide to courses which current Kansas State University students will be taking.

Students transferring at the junior level may find it advantageous to attend the summer session preceding fall enrollment. Engineering subjects that normally are offered during the summer include:

CE 333	Statics	3
EE 510	Circuit Theory I	3
IE 372	Computers & Data Processing	2
IE 501	Industrial Management	3
ME 512	Dynamics	3
ME 513	Thermodynamics I	3

Engineering sciences

Engineering sciences apply science and mathematics to the basic engineering areas. Students pursuing a B.S. degree in engineering must satisfy the following requirements:

A. A minimum of 30 semester hours of engineering science courses.

B. At least 9 semester hours of engineering science courses outside the student's major department.

C. At least four of the five subject areas in the following list must be represented in the 30 semester hours.

1. Engineering materials

CHE 350	Engineering Materials	2
CHE 352	Engineering Materials	3
NE 515	Nuclear Engineering Materials	2
EE 695	Solid State Engineering	3

2. Analytical mechanics

	Either	
CE 333	Statics	3
	and	
ME 512	Dynamics	3
	or	
CE 530	Statics and Dynamics	4

3. Circuits, fields, and electronics

EE 510	Circuit Theory I	3
EE 519	Electrical Circuits & Controls	4
EE 557	Electromagnetic Theory	4
EE 632	Engineering Applications of Microcomputer Systems	3

4. Thermodynamics

CHE 515	Chemical Engineering Thermodynamics I	2
ME 513	Thermodynamics	3

Basic pre-engineering subjects — Use in various curricula-credit hours at KSU

	AGE	ARE	CE	CHE	CNS	EE	ET	IE	ME	NE
Accounting	*				3		*	3		
Biology	4			*		*				*
Chemistry	8	8	8	8	*	8	5	8	8	8
Computer programming	2	3	*	1	3	3	2	2	2	*
Economics	3	*	3	3	3	3	*	3	3	3
English Composition I & II**	6	6	6	6	6	6	6	6	6	6
Geology			3	*	3					*
Graphics	2	6	2	*	6	2	2	2	5	2
Mathematics (Analytic Geometry & Calculus and Elementary Differential Equations)	16	16	16	16	4	16	6	16	16	16
Mathematics (algebra & trigonometry)							6			
Organic chemistry				8						*
Physics	10	10	10	10	8	10	8	10	10	10
Qualitative analysis			*	4						*
Social science/humanities electives	15	12	14	15	12	15	15	15	15	15
Speech (public speaking)	2	2	2	2	2	2	2		2	
Statics	3	3	3	*	3	3	*	3	3	3
Statistics	*	*	*			*	3	6	*	

***Elective**

Excess credit hours in courses listed above may possibly be used in elective areas after consultation with a KSU departmental advisor and the dean's office.

**English Composition II is optional if an "A" or "B" grade is achieved in English Composition I.

5. Flow and rate processes

ME 571	Fluid Mechanics	3
CHE 530	Transport Phenomena I	3

Note—It should be recognized that there are other courses in these subject areas which may properly be considered engineering sciences. In addition, there are areas of engineering science which are not listed.

Humanities and social science electives

To add breadth to education and to help prepare for a more effective role in society each engineering student is required to take several courses in the social sciences and humanities. The following list of electives has been approved by the faculty.

Art—any course
Economics—any course above ECON 110
English—any course above ENGL 100 except ENGL 415
Geography—any course except GEOG 220 and GEOG 221
History—any course
Journalism—JMC 235 Survey of the Mass Media (3)
Modern languages—at least eight hours
Music—any course; Music Listening Lab must be **the** 2-credit-hour course
Philosophy—any course except PHILO 220 and PHILO 110
Political science—any course
Psychology—any course
Sociology and anthropology—any course
Speech—any course in "Theatre and Interpretation"
Architecture and design—any course in history or appreciation of architecture
Engineering—DEN 250 Impact of Engineering Technology on Society (3)
DEN 299 Honors Seminar in Engineering (2)
DEN 399 Honors Colloquium in Engineering (1)

From the areas listed above at least two courses must be taken at the 400 level or above; however, not more than three credit hours may be taken in applied music and/or applied art.

Grade requirements

Before attempting a course taught in the College of Engineering, a grade of "C" or better must be earned in any courses which are prerequisite to it. This policy is effective starting with the fall 1983 semester and is not retroactive.

Summer school

Many of the courses appearing in the engineering curricula, not only those which are offered in the College of Engineering but also those in the College of Arts and Sciences, may be taken during the summer term.

High school seniors who have had insufficient mathematics to enroll in MATH 220 Analytic Geometry and Calculus I are urged to investigate the possibility of summer school to remove this mathematics deficiency. MATH 125 College Algebra and Trigonometry and MATH 150 Plane Trigonometry are offered during the summer sessions and provide an excellent transition from high school mathematics into the engineering curriculum.

Information concerning the courses offered is contained in the summer school catalog, which may be obtained from the director of admissions of the University. The summer school catalog is published in early spring for the coming summer.

International student admission

International students are admitted on a selective basis. Applications for admission are judged on the basis of several factors, including, but not limited to: secondary school record, test scores, academic record at the college and university level, trend in grades and grades in mathematics, physical sciences and related areas.

Because of a limitation on the number of international students that can be accommodated, the College of Engineering reserves the right to apply more rigorous admissions criteria to applicants who are not U.S. citizens.

Program Options

Interdisciplinary studies

Although engineering curricula are generally structured, it is possible to pursue a secondary field of interest through the judicious selection of electives. If added flexibility is needed to pursue specific goals, the student may petition the advisor and department head for the substitution of required courses. Some of the more popular secondary areas are:

Business administration. Increasing numbers of engineers are assuming managerial positions in all phases of industrial operations. Some of the courses listed in the section of dual degrees could be appropriate technical electives for students with goals in the management area.

Pre-medicine. Many of the recent advances in medical research techniques, patient monitoring systems, artificial limbs and organs, aerospace and undersea medicine have been developed from the partnership of medicine and engineering. Engineering students wishing to satisfy entrance requirements to a typical school of medicine must take: chemical analysis, two semesters of organic chemistry, and two semesters of biology (BIOL 198 plus one of the following: BIOL 201, BIOL 535, BIOL 650). The pre-medicine advisor in the College of Arts and Sciences should be consulted prior to the junior year.

Pre-law. A graduate degree in law can be desirable for engineers wishing to pursue careers in industrial management or patent law. While there are no specific courses required for entry to law school, appropriate elective areas are: economics, political science, history, sociology, psychology, anthropology, accounting, and finance. The pre-law advisor in the College of Arts and Sciences should be consulted prior to the junior year.

Computer science. Modern electronic computers are powerful tools for the solution of complex engineering and/or management problems. An individual with training in both engineering and computer science possesses the background to attack problems over a broad range of areas. Appropriate courses include:

Languages:

CMPSC 200	Fundamentals of Computer Programming
CMPSC 300	Algorithmic Processes
CMPSC 305	Computer Organization and Programming I
CMPSC 405	Introduction to Programming Languages

Design:

EE 241	Introduction to Computer Engineering
EE 643	Computer Logic Design
EE 644	Digital Circuits Laboratory
EE 641	Design of Digital Systems I

Computational Techniques:

CHE 316	Chemical Engineering Computational Techniques
IE 571	Introduction to Operations Research
IE 573	Industrial Simulation
ME 760	Engineering Analysis I
NE 720	Nuclear Systems Analysis

Mathematics, physics, chemistry. Engineering students with interests in research should plan on graduate study. Preparation at the B.S. level could be enhanced by additional courses in mathematics and the basic sciences. Refer to the departmental listings in the College of Arts and Sciences section for possible electives.

Bioengineering. Bioengineering is a very broad field overlapping the life sciences and many engineering disciplines. Some of the sub-areas are bio-mechanics, ergonomics, bio-instrumentation, bio-materials, bio-energetics, water and waste treatment, food engineering, and environmental engineering. In addition to the courses listed in the pre-medicine section, other courses of interest are:

AGE 312	Biological Materials and Machine Functions in Agriculture
AGE 510	Environmental Design of Farm Buildings
AGE 520	Energy Use and Control in Agricultural Systems I
AGE 570	Energy Use and Control in Agricultural Systems II
AGE 700	Agricultural Process Engineering
CHE 715	Biochemical Engineering
CHE 725	Biotransport Phenomena
CE 563	Environmental Engineering Fundamentals
CE 565	Water and Wastewater Engineering
CE 761	Environmental Engineering Chemistry
CE 762	Water Treatment Systems
CE 766	Wastewater Treatment Systems I
EE 771	Control Theory Applied to Bioengineering
EE 772	Theory and Techniques of Bioinstrumentation
IE 551	Work Design
IE 609	Occupational Safety and Health
IE 625	The Man-Environment System
ME 622	Environmental Engineering I
ME 722	Environmental Engineering II

Food engineering. Engineers are needed in the food industry for process development and design, equipment design, and management of operations. The students should select technical electives to augment a background in chemistry, microbiology, agricultural and food sciences, and process engineering.

Energy systems engineering. The increasing demand for energy is one of the major problems confronting all nations of the world. New energy sources are needed in addition to more effective use of present resources. Interested students should select courses from the following areas: thermodynamics, energy conversion, nuclear reactor technology, electric energy systems, and engineering economics.

Dual degree programs

Students who want to pursue interdisciplinary interests in-depth may wish to enroll in a dual degree program. In general, the second degree may be earned with an additional year of study. A minimum of 150 semester hours is required for two B.S. degrees. To receive two bachelor of science degrees from the College of Engineering, a student must take at least 20 hours of course work in each major department. Since there are many possible combinations, questions should be referred to the dean's office. Three programs of interest are listed below.

Engineering and business administration. Ordinarily the program must be commenced during the student's sophomore year. Students desiring to pursue this dual degree program should contact the dean's office in the College of Business Administration.

Civil engineering and geology. Students interested in specializing in foundation engineering are advised to complete the B.S. degree requirements in civil engineering plus the requirements listed below to qualify for the B.S. degree in geology.

1. General requirements for B.S. degree in arts and sciences (see the College of Arts and Sciences section.)
2. Complete the following courses in geology:

Course		Sem. hrs.
GEOL 200	Historical Geology	4
GEOL 560	Mineralogy I	4
GEOL 561	Mineralogy II	4
GEOL 520	Geomorphology	4
GEOL 630	Structural Geology	4
GEOL 703	Stratigraphic Geology	4
GEOL 718	Field Geology	6
		30

Chemistry and chemical engineering. In addition to the required courses in chemical engineering, interested students should take:

Course		Sem. hrs.
CHM 551	Organic Chemistry II Lab.	2
CHM 597	Structure & Bonding	2
CHM 545	Chemical Separations	2
CHM 666	Instrumental Analysis	3
CHM 499	Undergraduate Research	3
MLANG 121	German I	4
MLANG 122	German II	4
CHM 667	Instrumental Analysis Lab	1
		21

Electives should be chosen to satisfy the humanities and social sciences requirements and the engineering science requirements listed earlier in the College of Engineering section.

Architecture and architectural engineering. For those students enrolled in the Department of Architectural Engineering and Construction Science, there is an opportunity to undertake a dual major with the curriculum of architecture. Interested students should consult with their advisors.

Integrated master's degree program

A five-year integrated program leading to a B.S. degree in any of the fields of engineering at the end of four years, and a master of science degree at the end of five years is available for promising undergraduate students. In architectural engineering, the comparable numbers would be five and six years.

Students who have completed the sophomore year and have outstanding scholastic records are invited to join the program. Each student, in consultation with a faculty advisor, will plan an individualized program of study which meets requirements for the B.S. and M.S. degrees. Features of the program include integrated planning, participation in research as an undergraduate, and enrollment in graduate-level courses in the senior year. Students participating in the program will be considered for financial assistance in the form of scholarships, fellowships, research assistantships, and part-time work.

Engineering honors program

The honors program in the College of Engineering offers the interested student an intellectual challenge consistent with one's ability and interests. Entering engineering freshmen with high school averages or American College Testing Program com-

posite scores within the top five percent will be invited to join the program. Transfer students with superior academic records also are eligible and will be invited to join the honors program. Sophomores and other upperclassmen enrolled in engineering who have not previously qualified for the honors program may, with the endorsement of a member of the engineering faculty and the approval of the engineering college honors committee, join the program.

Participation in the honors program will not shorten the time required for graduation for most students, but should be a stimulating experience. In addition to enrolling in honors sections in course work, the student may enroll in a variety of seminars, colloquia, and research problems designed to enrich and challenge the interested student. The honors program in engineering is closely integrated with the honors programs of the other colleges at KSU and provides an excellent opportunity for interdisciplinary study. A student in the honors program may elect to withdraw from the program at any time.

Cooperative education program

The College of Engineering, through its cooperative education program, offers students in engineering an opportunity to obtain experience in industry as an integral part of their formal education. After completion of the freshman year, engineering students alternate sessions of work and study taking three years (five work periods) to complete the sophomore and junior academic program. In this tandem arrangement, one student is a full-time employee in industry, while the other studies in a chosen professional engineering field. While the program extends the time required to earn a degree by one year, the student may obtain as much as 20 months of experience and earn a significant portion of college expenses. Participants are selected from students who are progressing satisfactorily toward a degree and have completed at least one semester in the chosen curriculum. Applications for the program are accepted any time after the student is enrolled in the College of Engineering and final selection is made through formal employment interviews with the participating companies.

Support Services

Center for effective teaching

The College of Engineering center for effective teaching is organized to further the college's goal of excellence in teaching. The center sponsors several programs to enhance teaching, including specialized training for young engineering educators, seminars in educational methods and techniques for all engineering faculty, student evaluation of undergraduate teaching, and monetary awards for excellence in teaching. The center is funded by private endowment and also helps in the financing of specialized teaching aids, teaching reference materials, and educational research.

The center's activities are coordinated by an advisory committee of students and faculty from the College of Engineering.

Engineering Experiment Station

William H. Johnson, director

The College of Engineering is committed to the concept that good teaching and good research complement each other to the benefit of the student, the public, and the faculty member himself. The Experiment Station is the division of the college responsible for the administration of research.

The research faculty of the Experiment Station is composed of members of all departments of the College of Engineering. Researchers from the Engineering Experiment Station work closely with those from the Agricultural Experiment Station, and with others from within the University on projects of mutual concern.

The activities of the Engineering Experiment Station are funded by state appropriations and by grants and contracts from governmental agencies and private industries. The annual research budget is more than $3,000,000, with approximately 25 percent appropriated by the state and the remainder from other sources. Research now being carried on includes:

Hydrogen fuel research
Solar energy applications
Wind energy studies
Fermentation systems
Fluidized bed technology
Signal processing
Gasification of biomass
Rail-highway grade crossing safety
Buckling behavior of concrete shells
Image enhancement
Bioengineering
Optimizing for comfort and energy use
Human physiological responses to thermal stresses
Improving quality of manufactured products
Energy conservation
Heat transfer augmentation during two-phase flow
The effect of room and control systems dynamics on energy consumption
Combustion kinetics
Radiation dosimetry
Robotics

Institute for Environmental Research

Frederick H. Rohles, Jr., director

The institute is organized to provide opportunities and facilities for research into man's relation and response to environmental factors.

The objectives of the institute are to: provide a focal point for interdisciplinary research relevant to the effect of normal and altered environments on man; determine response of human and other organisms to environmental factors affecting health, comfort, affectivity, productivity, and learning; investigate methods of environmental control and modification; provide opportunities and facilities for M.S. and Ph.D. research projects and specialized graduate level courses and seminars; and collect and disseminate data and provide research and service to industry and governmental agencies interested in environmental problems.

University staff and graduate students carry out projects and research using the facilities of the institute and with the assistance of its staff. The institute is under the direction of the dean of the College of Engineering, and its research is administered through the Engineering Experiment Station.

The institute's executive council is an interdisciplinary group, appointed from members of the participating staff and directors, which formulates policy procedures, initiates and directs research, and advises faculty and graduate students who associate with the institute for special projects. The research associates are members of their respective major departments throughout the University, are members of the graduate faculty, and come from the areas of: mechanical, electrical, chemical, and industrial engineering; psychology; physiological sciences; architecture; family and child development; clothing, textiles,

and interior design; foods and nutrition; grain science and industry; infectious diseases; pathology; statistics; and education. The institute is organized so faculty members or students from any department can carry out research in the institute within its stated objectives.

Center for Energy Studies

N. Dean Eckhoff, director

The goal of the center is to conduct interdisciplinary studies and to provide leadership training in the planning, design, and operation of fuel production processes, power generation, transportation and utilization systems, and in policy matters involving the management of energy resources.

The center carries out basic as well as mission-oriented interdisciplinary studies on problems related to energy resources and power production, disseminates the results of these studies through seminars and publication of reports, and provides information to students and personnel from government and industry to upgrade their professional competence.

Center for Transportation Research and Training

Bob L. Smith, director

The center's goal is to conduct interdisciplinary research and training in the planning, design, and operation of rural and urban transportation systems.

The center carries out interdisciplinary mission-oriented research concerning national, regional, state, and local transportation problems; disseminates the results of research through publication of reports and seminars for university, industry, and government representatives to assure that the results can and will be applied to the solution of practical transportation problems; and provides training to students and personnel from the transportation community to upgrade their professional competence.

In performing the stated missions of the center, systems analysis and synthesis techniques will be emphasized, and the safety, aesthetic, and environmental aspects of transportation systems will not be neglected.

Institute for Computational Research in Engineering

J.O. Mingle, director
H.S. Walker, associate director

The institute promotes engineering research, development, and service for computer-oriented activities. The interdisciplinary aspects of these activities are stressed with emphasis upon simulation by computer modeling.

The institute is administered through the College of Engineering and provides a University-wide center for information concerning computational engineering. Other functions of the institute include the preparation of research proposals, the dissemination of information through conferences, workshops, and reports, and the encouragement of creative uses of computers.

Nuclear Reactor Facility

Richard E. Faw, director

Kansas State University has a TRIGA Mark II pulsing nuclear reactor and a well-equipped neutron activation analysis laboratory within its Department of Nuclear Engineering. The reactor, which is licensed for steady-state operation to 250 kilowatts and pulsed operation to 250 megawatts, is used for teaching and research by many departments. The reactor is used in part for radiation effects studies and for neutron activation analysis, an analytical technique which is essentially non-destructive and offers sensitivities better than one part per billion for some elements. Neutron activation analysis finds application in diverse fields such as diagnostic medicine, plant improvement studies, nutrition studies, age dating of geological specimens, forensics, toxicology and metabolic studies.

Kansas Industrial Extension Service

Richard B. Hayter, director

The Kansas Industrial Extension Service (KIES) uses the facilities of the College of Engineering to assist Kansas industries. Functions of the KIES include direct technical assistance, preparation and distribution of special publications, and continuing education. Farrell Library on the KSU campus, Linda Hall Library in Kansas City, various computer information retrieval systems, and other informational sources can be utilized. The laboratory and computer facilities and the faculty of the college can also be used to provide answers to technical questions.

Short courses, conferences, seminars, and workshops are arranged to provide continuing education for technical people, including practicing engineering and manufacturing personnel. Specialized courses can be developed in response to a request by any Kansas industry.

To use the service, write or call Kansas Industrial Extension Service, 133 Ward Hall, Kansas State University, Manhattan, Kansas 66506, 913/532-6026.

Kansas Energy Extension Service

Richard B. Hayter, director

The Kansas Energy Extension Service (KEES) is a technical assistance program for the small energy consumer ranging from residential to small business and industry. The KEES is a program of the Kansas Energy Office operated through Kansas State University with assistance from the other Regents' institutions. It is a joint effort of the College of Engineering and the Cooperative Extension Service.

The technical outreach of the KEES is directed toward four program areas: residential, agricultural, institutional, and small business and industry. Assistance is offered through short courses, technical publications, and direct responses to inquiries including on-site visits. Recommendations for reducing energy consumption are offered as is assistance with alternate energy systems.

Inquiries should be directed to the Kansas Energy Extension Service, 133 Ward Hall, Kansas State University, Manhattan, Kansas 66506, 913/532-6026.

Agricultural Engineering

Charles K. Spillman, head of department

Professors Chung,* Clark,* Jepsen, Johnson,* Manges,* and Spillman;* Associate Professors Baugher, Black, Murphy, Morgan Powell, Rogers, Schrock, and Steichen; Assistant Professors Barnes, Chang,* Eckhoff, Haque, Heber, Horner, Kuhlman, Pacey, TenEyck, and Thomas; Instructors Ward and Welty; Emeriti: Professors Fairbanks,* Holmes, Larson,* Lipper,* Stevenson,* Stover, and Wendling; Associate Professor Schindler.

Undergraduate study

Agricultural engineering is the field that applies the science of engineering principles to the food production and agricultural industry. Basic training enables the student to develop new ideas and methods as well as to further the application of engineering fundamentals in such areas as production mechanization; soil, water, and air resources; power and energy sources; plant and animal environment; and feed and waste handling, processing, and storage.

Graduate study

Major work leading to the master of science and doctor of philosophy degrees is offered in the fields of farm power and machinery, farm structures, soil and water engineering, rural electrification, animal waste management, and processing.

Excellent opportunities and capabilities exist for advanced study. In addition to modern departmental facilities, the USDA Grain Marketing Research Center offers unique possibilities for specialization in the engineering of grain processing and handling systems.

Curriculum in agricultural engineering (AGE)

Bachelor of Science in Agricultural Engineering
131 hours required for graduation

Freshman

Fall semester	**Course**	**Sem. hrs.**
ENGL 100	English Composition I	3
CHM 210	Chemistry I	4
MATH 220	Analytic Geometry & Calculus I	4
AGE 160	Agricultural Engineering Concepts	2
	Humanities or social science electives	3
		16
Spring semester		
ENGL 120	English Composition II*	
	or	
	Humanities or social science electives	3
MATH 221	Analytic Geometry & Calculus II	4
ECON 110	Economics I	3
CHM 230	Chemistry II	4
PE 101	Concepts in Physical Education	1
		15

Sophomore

Fall Semester		
MATH 222	Analytic Geometry & Calculus III	4
PHYS 213	Engineering Physics I	5
BIOL 198	Principles of Biology	4
ME 212	Engineering Graphics 1	2
SPCH 105	Oral Communication I	2
		17
Spring semester		
MATH 240	Elementary Differential Equations	4
PHYS 214	Engineering Physics II	5
AGE 312	Biological Materials & Machine Functions in Agriculture	3
IE 372	Computers & Data Processing	2
CE 333	Statics	3
		17

Junior

Fall semester		
AGE 510	Environmental Design of Farm Buildings	3
ME 513	Thermodynamics I	3
ME 512	Dynamics	3
CE 533	Mechanics of Materials	3
CE 534	Mechanics of Materials Lab	1
ENGL 415	Written Communication for Engineers	3
		16
Spring semester		
AGE 566	Analysis of Agricultural Structures	3
AGE 520	Energy Use & Control in Agricultural Systems I	3
AGE 551	Hydrology	2
ME 571	Fluid Mechanics	3
EE 510	Circuit Theory	3
	or	
EE 519	Electric Circuits & Controls	4
CE 522	Soil Mechanics I	3
	or	
AGRON 746	Soils Physics	3
		17/18

Senior

Fall semester		
AGE 530	Soil and Water Engineering	3
AGE 536	Design of Agricultural Machinery	3
	Humanities or social science electives	6
	Technical electives	6
		18
Spring semester		
AGE 570	Energy Use and Control in Agricultural Systems II	3
AGE 581	Professional Practice in Agricultural Engineering	1
	Humanities or social science electives	3
	Technical electives	8/7
		15/14

*English Composition II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from English Composition I.

Humanities and social science electives are to be selected from the catalog list and need not be taken in the order listed in the curriculum.

Technical electives to be chosen with the advice and approval of the faculty advisor and department head.

The engineering science requirements will be satisfied by the required courses in this curriculum.

Courses in agricultural engineering
Undergraduate credit

AGE 160. Agricultural Engineering Concepts. (2) I. An introduction to agricultural engineering and engineering design. Problems involving the basic concepts of engineering science are considered. One lec. and two hours lab a week. AGE-160-1-0903

AGE 312. Biological Materials and Machine Functions in Agriculture. (3) II. Physical properties of biological materials. Functional requirements of agricultural machines. Two hours rec. and three hours lab a week. Pr.: PHYS 213. AGE-312-1-0903

AGE 499. Honors Research in Agricultural Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering Honors Program. A report is presented orally and in writing during the last semester. AGE-499-4-0903

Undergraduate and graduate credit in minor field

AGE 510. Environmental Design of Farm Buildings. (3) I. Fundamentals of psychrometrics, heat flow through walls, and air flow plus weather data and requirements of animals or stored products needed for environmental design of farm buildings. Two hours rec. and three hours lab a week. Pr.: IE 372. Pr. or conc.: ME 513. AGE-510-1-0903

AGE 520. Energy Use and Control in Agricultural Systems I. (3) II. Theory and application of energy conversion devices; measurement methods and instrumentation; fundamental concepts of hydraulic, electronic, and pneumatic control systems. Two hours rec. and three hours lab a week. Pr.: ME 513. AGE-520-1-0903

AGE 530. Soil and Water Engineering. (3) I. Principles and measures for controlling stormwater runoff and soil erosion; design of water handling structures for land drainage, flood protection, and irrigation; agricultural surveying. Two hours rec. and three hours lab a week. Pr.: AGE 551, ME 571, and CE 522 or AGRON 745. AGE-530-1-0903

AGE 536. Design of Agricultural Machinery. (3) I. Analysis and design of agricultural machines. Two hours rec. and three hours lab a week. Pr.: PHYS 214. Pr. or conc.: CE 533, AGE 312. AGE-536-1-0903

AGE 551. Hydrology. (2) I, II. A study of the sources of supply and movement of underground and surface waters. Two hours rec. a week. Pr.: PHYS 113 or PHYS 213. (Cross listed with CE 551.) AGE-551-0-0903

AGE 566. Analysis of Agricultural Structures. (3) II. Estimation of loads on agricultural structures; allowable unit stresses; structural systems in agricultural buildings. Three hours rec. a week. Pr.: CE 533. AGE-566-0-0903

AGE 570. Energy Use and Control in Agricultural Systems II. (3) II. Application of energy to condition and process biological materials important to agriculture; to modify their environments; and to measure, modify, or induce certain characteristics. Two hours rec. and three hours lab a week. Pr.: AGE 520 and EE 510 or EE 519. AGE-570-1-0903

AGE 581. Professional Practice in Agricultural Engineering. (1) II. Professional attitudes and ethics. Post-degree career planning and social responsibilities. One hour rec. a week. Pr.: Senior standing. AGE-581-0-0903

Undergraduate and graduate credit

AGE 620. Problems in Agricultural Engineering. (Var.) I, II, S. Problems in the design, construction, or application of machinery or power in agriculture, structures, modern conveniences, and rural electrification. Pr.: Approval of instructor. AGE-620-3-0903

AGE 650. Agricultural Systems Engineering. (2) I. Development of plans and specifications for buildings, equipment and controls for selected systems of agricultural production. Six hours lab a week. Pr.: AGE 536, AGE 566. AGE-650-1-0903

AGE 700. Agricultural Process Engineering. (3) I. Theory, equipment, and design techniques in processing agricultural products. Two hours rec. and three hours lab a week. Pr.: ME 571, ME 513. AGE-700-1-0903

AGE 705. Irrigation and Drainage. (3) I, II. Design and operative problems involved in irrigation or drainage of agricultural land. Two hours rec. and three hours lab a week. Pr.: AGE 551, ME 571 and CE 522 or AGRON 745. AGE-705-1-0903

AGE 710. Advanced Farm Power and Machinery. (3) I. Analytical study of design, construction and operating characteristics of tractors and selected farm machines. Two hours rec. and three hours lab a week. Pr.: AGE 536. AGE-710-1-0903

AGE 780. Measurement Systems. (3) II. Theory and application of measurement systems with emphasis on environments and processes related to soils, plants and animals. Two hours rec. and three hours lab a week. Pr.: EE 510 or EE 519. AGE-780-1-0903

Graduate credit

AGE 810. Research in Agricultural Engineering. (Var.) I, II, S. The laboratories of the University are available for research in all areas of agricultural engineering. The results of such investigation may be incorporated in bulletins of the Agricultural Experiment Station. Pr.: Approval of department head. AGE-810-4-0903

AGE 815. Graduate Seminar in Agricultural Engineering. (1) I, II. Presentation and discussion of research philosophies, procedures, and results. One hour rec. a week. Required of all graduate students in Agricultural Engineering. Pr.: Graduate standing. AGE-815-0-0903

AGE 898. Master's Report. (Var.) I, II, S. Topics selected with approval of major professor and department head. AGE-898-3-0903

AGE 899. Master's Thesis. (Var.) I, II, S. Topics selected with approval of major professor and department head. AGE-899-4-0903

AGE 999. Dissertation Research. (Var.) I, II, S. Topics selected with approval of major professor and department head. AGE-999-4-0903

Courses for students in agriculture

See College of Agriculture section for agricultural engineering courses for students in agriculture.

Architectural Engineering/ Construction Science

Robert E. Dahl, head of department

Professors Bissey,* Dahl,* Hodges,* and Lindly;* Associate Professors Blackman and Burton;* Assistant Professor Goddard; Instructors Goodman, Malone, and Mayo; Emeritus: Professor Thorson.*

Undergraduate study

The architectural engineering program is planned for the student who is particularly interested in the engineering aspects of building design. The architectural engineer must be sympathetic with the practical, functional, and aesthetic possibilities of contemporary materials, and mechanical, electrical, and structural systems. As an important member of the building design team, he must be able to create designs that will answer the economic, safety, and aesthetic requirements of a project. He must have a feeling of the total design.

The construction science program of study has as its goal the training of construction managers. The graduate enters the construction field in areas generally categorized as:

Building construction—in this category are apartments, office buildings, industrial plants, hospitals, churches, schools.

Highway construction—dams, tunnels, flood control projects.

Utilities construction—sanitary works, waterworks, power lines, pipelines.

Curriculum in architectural engineering (ARE)

Bachelor of Science in Architectural Engineering
160 hours required for graduation

Freshman

Fall semester	Course	Sem. hrs.
PDP 205	Design Graphics I	3
ENGL 100	English Composition I	3
MATH 220	Analytic Geometry & Calculus I	4
CHM 210	Chemistry I	4
PE 101	Concepts in Physical Education	1
ARE 100	Architectural Engineering Orientation	2
ARE 020	Architectural Engineering Seminar	0
		17
Spring semester		
PDP 206	Design Graphics II	3
CNS 320	Construction Materials	2
MATH 221	Analytic Geometry & Calculus II	4
CHM 230	Chemistry II	4
ENGL 120	English Composition II*	
	or	
	Humanities or social science electives	3
ARE 020	Architectural Engineering Seminar	0
		16

Sophomore

Fall semester		
ART ---	Elective	2
CNS 210	Introduction to Construction Programming	3
CNS 321	Construction Techniques & Detailing	3
PHYS 213	Engineering Physics I	5
MATH 222	Analytic Geometry & Calculus III	4
ARE 020	Architectural Engineering Seminar	0
		17
Spring semester		
CNS 325	Construction Drawing	3
ARCH 301	Appreciation of Architecture	3
SPCH 105	Oral Communication I	2
PHYS 214	Engineering Physics II	5
MATH 240	Elementary Differential Equations	4
ARE 020	Architectural Engineering Seminar	0
		17

Junior

Fall semester		
CE 333	Statics	3
PDP 207	Form, Space & Order I	3
CE 212	Elementary Surveying Engineering	3
GEOL 100	Introductory Geology	3
	Humanities or social science electives	3
ARE 020	Architectural Engineering Seminar	0
		15
Spring semester		
CE 533	Mechanics Materials	3
CE 534	Mechanics Materials Lab	1
PDP 208	Form, Space & Order II	3
	Humanities or social science electives	3
ENGL 415	Written Communication for Engineers	3
ME 512	Dynamics	3
ARE 020	Architectural Engineering Seminar	0
		16

Senior

Fall semester		
ARE 411	Architectural Engineering Design I	3
CE 537	Introduction to Structural Analysis	4
ARE 523	Timber Structures	3
ME 513	Thermodynamics	3
	Humanities or social science electives	3
ARE 020	Architectural Engineering Seminar	0
		16
Spring semester		
ARE 412	Architectural Engineering Design II	3
ARE 524	Theory of Structures II	4
ARE 536	Sanitation Systems	3
ME 571	Fluid Mechanics	3
ARE 537	Acoustic Systems	2
ARE 020	Architectural Engineering Seminar	0
		15

Fifth year

Fall semester		
ARE 535	Lighting Systems	3
CE 522	Soil Mechanics	3
ARE 528	Theory of Structures III	4
ARE 534	Thermal Systems	3
EE 519	Electric Circuits & Control	4
ARE 020	Architectural Engineering Seminar	0
		17
Spring semester		
ARE 595	Senior Project	3
CE 528	Foundation Engineering	3
ARE 539	Architectural Engineering Management	3
	Free electives	5
ARE 020	Architectural Engineering Seminar	0
		14

Humanities and social science electives are to be selected from the catalog list and need not be taken in the order listed in the curriculum. (2 courses must be 400 level or above)

Electives to be selected and approved after consultation with the student's faculty advisor.

*English Composition II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from English Composition I.

Curriculum in construction science (CNS)

Bachelor of Science in Construction Science
130 hours required for graduation

Freshman

Fall semester	Course	Sem. hrs.
ENGL 100	English Composition I	3
MATH 220	Analytic Geometry & Calculus I	4
PDP 205	Design Graphics I	3
SPCH 105	Oral Communication I	2
ECON 110	Economics I	3
PE 101	Concepts in Physical Education	1
CNS 016	Construction Seminar	0
		16

Spring semester		
CE 212	Elementary Surveying Engineering	3
PDP 206	Design Graphics II	3
CNS 210	Introduction to Construction Programming	3
PHYS 113	General Physics I	4
CNS 320	Construction Materials	2
CNS 016	Construction Seminar	0
		15

Sophomore

Fall semester		
ARCH 301	Appreciation of Architecture	3
CNS 321	Construction Techniques & Detailing	3
CE 231	Statics A	3
CNS 250	Site Construction	3
GEOL 100	Introductory Geology	3
ENGL 120	English Composition II*	
	or	
	Humanities or social science electives	3
CNS 016	Construction Seminar	0
		18

Spring semester		
CNS 325	Construction Drawing	3
CE 331	Strength of Materials A	3
CE 332	Strength of Materials A Lab	1
PHYS 114	General Physics II	4
ACCTG 211	Financial Accounting	3
	Humanities or social science electives	3
CNS 016	Construction Seminar	0
		17

Junior

Fall semester		
ARE 522	Theory of Structures I	3
CNS 523	Timber Construction	3
CNS 535	Electrical Service & Installation	3
CNS 540	Construction Methods & Equipment	3
	Humanities or social science elective	3
	Management electives	3
CNS 016	Construction Seminar	0
		18

Spring semester		
CNS 524	Steel Construction	3
CNS 534	Heating & Air Conditioning	3
ARE 537	Acoustic Systems	2
ENGL 415	Written Communication for Engineers	3
MANGT 390	Business Law I	3
	Management electives	3
CNS 016	Construction Seminar	0
		17

Senior

Fall semester		
CNS 528	Concrete & Masonry Construction	3
CNS 541	Construction Estimating	3
CNS 542	Construction Management I	3
	Professional electives	5
	Humanities or social science electives	3
CNS 016	Construction Seminar	0
		17

Spring semester		
CNS 543	Construction Management II	3
CNS 322	Soil & Foundation Construction	3
CNS 536	Water Supply & Sanitation	3
	Professional electives	3
	Free electives	3
CNS 016	Construction Seminar	0
		15

Humanities and social science electives are to be selected from the catalog list and need not be taken in the order listed in the curriculum. (2 courses must be 400 level or above)

Management electives from approved list.

These electives to be selected and approved after consultation with the student's faculty advisor.

Technical Calculus I & II may be taken in lieu of Analytic Geometry & Calculus I and free elective.

*English Composition II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from English Composition I.

Courses in architectural engineering

Undergraduate credit

ARE 020. Architectural Engineering Seminar. (0) I, II. Presentation of professional problems and practices by students, faculty, and professionals associated with the career of architectural engineering. One hour lec. a month. ARE-020-0-0904.

ARE 100. Architectural Engineering Orientation. (2) II. Introduction to Architectural Engineering; emphasis on relationship of Architectural Engineering to the building industry. Two hours lec. a week. ARE-100-0-0904.

ARE 411. Architectural Engineering Design I. (3) I. Principles and elements of design; synthesis of structural, mechanical, electrical, sanitary, and construction; considering interrelationship in performance and economics. Nine hours lab a week. Pr.: PDP 208, CNS 325. ARE-411-1-0904

ARE 412. Architectural Engineering Design II. (3) II. Continuation of Architectural Design I. Nine hours lab a week. Pr.: ARE 411. ARE-412-1-0904

ARE 499. Honors Research in Architectural Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering Honors Program. A report is presented orally and in writing during the last semester. ARE-499-4-0904

Undergraduate and graduate credit in minor field

ARE 522. Theory of Structures I. (3) I, II. Bar stresses in trusses; solid and framed arches; mathematical and graphical solution of stresses and deflections in beams under static and moving loads. Six hours a week. Pr.: CE 331. ARE-522-1-0904

ARE 523. Timber Structures. (3) I, II. Analysis and design of timber structures using solid and laminated materials. Three hours rec. a week. Pr.: CE 533. Pr. or conc.: CE 537. ARE-523-0-0904

ARE 524. Theory of Structures II. (4) I, II. Analysis and design of metal structures; emphasis on buildings. Six hours a week. Pr.: CE 537. ARE-524-1-0904

ARE 528. Theory of Structures III. (4) I, II, S. Design of reinforced concrete building frames; footings, columns, and floor systems, attention being given to costs and economical design. Six hours a week. Pr.: CE 537. ARE-528-1-0904

ARE 534. Thermal Systems. (3) I, II. Study of man's physiological needs, principles of heat transfer, principles of building thermal balance, comfort systems, and space-use relationships, involving heating, ventilating, and cooling as integral parts of architectural engineering design. Three hours a week. Pr.: PHYS 214 and CNS 321. ARE-534-0-0904

ARE 535. Lighting Systems. (3) I, II. Study of human needs in lighting, lighting system design and application, power and lighting circuitry design as integral parts of architectural engineering design. Three hours lec. a week. Pr. or conc.: CNS 321, EE 519. ARE-535-0-0904

ARE 536. Sanitation Systems. (3) I, II. Stream and water pollution, sewage disposal systems, building piping systems, space relationships, equipment requirements as related to architectural design, structural systems, construction materials and techniques. Three hours a week. Pr.: PHYS 213 and CNS 321. ARE-536-0-0904

ARE 537. Acoustic Systems. (2) I, II. Hearing and the ear, sound generation, acoustical correction, noise reduction, sound transmission all as integral parts of architectural design. Two hours a week. Pr.: PHYS 113 or PHYS 213. ARE-537-0-0904

ARE 538. Problems in Architectural Engineering. (Var.) I, II, S. A study of specific design problems under the direct supervision of a member of the Architectural Engineering faculty. Pr.: Junior standing. ARE-538-3-0904

ARE 539. Architectural Engineering Management. (3) I, II. General business and management procedures. Drawings, specifications, and conceptual estimating. Contracts, bonds, liability, arbitration and insurance. Project financing. Pr.: ARE 412. ARE-539-0-0904

ARE 595. Senior Project. (3) I, II. Student working individually with laboratory support will prepare and present a project of appropriate scope and complexity with emphasis on structural, mechanical, acoustical, and electrical requirements. Eight hours lab a week. Pr.: ARE 412, 524, 528, 534, 535, 536, 537. ARE-595-1-0904

ARE 596. Senior Project II. (2) II. Continuation of ARE 595. Pr.: ARE 595. ARE-596-1-0904

Undergraduate and graduate credit

ARE 634. Building Thermal System Design. (3) I, II. Design and specifications of selected thermal and mechanical systems for structures. The course is designed to utilize all the modern techniques of thermal/mechanical system design for buildings. Two hours rec. and three hours lab a week. Pr.: ARE 534 or CNS 534. ARE-634-1-0904

ARE 635. Electrical System Design. (3) I, II. Complete design and specifications of electrical systems for a selected structure. The course is designed to utilize the National Electrical Code in conjunction with all the modern techniques of electrical system design for buildings. Two hours rec. and three hours lab a week. Pr.: ARE 535 or CNS 535. ARE-635-1-0904

ARE 780. Theory of Structures IV. (3) II. Continuation of Theory I, II, and III, with special emphasis being placed on the complete problem of the structure as a whole. Three hours a week. Pr.: CE 537 or ARE 522 and 523, 524, and 528. ARE-780-0-0904

Graduate credit

ARE 885. Structural Systems Design. (3) I, II. A study of integrated structural, mechanical, and electrical systems; economic evaluation. Two hours rec. and three hours lab a week. Pr.: ARE 780. ARE-885-1-0904

Courses in construction science
Undergraduate credit

CNS 016. Construction Seminar. (0) I, II. Presentation of professional problems and practices by students, faculty, contractors, architects, and various organizations associated with the building industry. One hour lec. a month. CNS-016-0-0904

CNS 210. Introduction to Construction Programming. (3) I, II. Application of digital computer techniques to the solution of elementary problems in the field of Construction Science and Architecture. Pr.: MATH 150. Four hours a week. CNS-210-0-0904

CNS 250. Site Construction. (3) I, II. Study of site construction problems and procedures, site survey and investigations, review of site plans, construction layouts, earthwork calculations; computer applications. Pr.: PDP 206, CNS 210, CE 212. Four hours a week. CNS-250-1-0904

CNS 320. Construction Materials. (2) I, II. Study and analysis of construction materials, their properties, selection and use. Two hours rec. a week. Pr.: PDP 205. CNS-320-0-0904

CNS 321. Construction Techniques and Detailing. (3) I, II. Study of construction methods and procedures in the assembly of building materials. Nine hours lab a week. Pr.: PDP 206. Pr. or conc.: CNS 320. CNS-321-1-0904

CNS 325. Construction Drawings. (3) I, II. Production of a set of construction drawings. Emphasis on construction procedures. Introduction to shop drawings. Nine hours lab a week. Pr.: CNS 321. CNS-325-1-0904

CNS 499. Honors Research in Construction Science. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering Honors Program. A report is presented orally and in writing during the last semester. CNS-499-4-0904

Undergraduate and graduate credit in minor field

CNS 523. Timber Construction. (3) I, II. Principles of design, fabrication, and erection of timber structures. Two hours lec. and three hours lab a week. Pr. or conc.: ARE 522. CNS-523-0-0904

CNS 524. Steel Construction. (3) I, II. Principles of design, fabrication, and erection of structural steel in conformance with codes. Two hours lec. and three hours lab a week. Pr.: ARE 522. CNS-524-0-0904

CNS 528. Concrete and Masonry Construction. (3) I, II. Principles of design, fabrication, and erection of concrete and masonry structures. Two hours lec. and three hours lab a week. Pr.: ARE 522. CNS-528-0-0904

CNS 534. Heating and Air Conditioning. (3) I, II. Principles of design, application, installation, and estimating heating and air conditioning systems for buildings. Three hours rec. a week. Pr.: PHYS 113 and CNS 321. CNS-534-0-0904

CNS 535. Electrical Service and Installation. (3) I, II. The principles of design, application, installation, and estimating electrical systems for buildings. Three hours rec. a week. Pr.: PHYS 114 and CNS 321. CNS-535-0-0904

CNS 536. Water Supply and Sanitation. (3) I, II. Principles and practices of sanitation and water supply in buildings including code requirements and estimating. Pr.: PHYS 113 and CNS 321. CNS-536-0-0904

CNS 540. Construction Methods and Equipment. (3) I, II. Practical problems encountered in the erection of buildings and use of construction equipment. Pr.: CNS 250 and 321. CNS-540-0-0904

CNS 541. Construction Estimating. (3) I, II. Principles, theories, and methods of building estimating. Nine hours lab a week. Pr.: CNS 325 and 540. CNS-541-1-0904

CNS 542. Construction Management I. (3) I, II. General business and management procedures of construction contracting; human relations and communications. Pr. or conc.: CNS 541. CNS-542-0-0904

CNS 543. Construction Management II. (3) I, II. Construction safety; project planning and scheduling techniques. Computer applications. Pr.: CNS 210, 541, and 542. CNS-543-0-0904

CNS 544. Problems in Construction Science. (Var.) I, II, S. A study of specific design problems under the direct supervision of a member of the Construction Science faculty. Pr.: Junior standing. CNS-544-3-0904

CNS 545. Construction Problems. (2) I, II. Analysis of formwork design for standard and unusual wall and floor shapes. Analysis of temporary construction structures. Concrete placement techniques, study of construction failures, advanced construction techniques, time-motion studies, and equipment. Pr.: CNS 540, CNS 523, CNS 325. Pr. or conc.: CNS 524. CNS-545-0-0904

CNS 638. Mechanical and Electrical Estimating. (2) I, II. Techniques of mechanical and electrical building systems estimating. Procedures for evaluating relative costs of different systems. Two three-hour labs a week. Pr.: ARE 534 and 535 or Pr.: CNS 534 and CNS 535. CNS-638-1-0904

Chemical Engineering

L.T. Fan,* head of department

Professors Akins,* Erickson,* Fan,* Kyle,* Matthews,* and Walawender;* Associate Professors Lai* and Roth;* Assistant Professors Glasgow* and Sclup;* Emeriti: Professors Bates and Honstead; Assistant Professor Hall.

Undergraduate study

Chemical engineers contribute to society through the useful application of knowledge and understanding of chemistry, physics, and mathematics. Chemical engineers can expect to participate in many decisions crucial to the preservation and improvement of society, especially in the areas of energy and food production, resource management, and the specification and design of pollution control processes.

The chemical engineering curriculum is best suited to highly motivated students with strong abilities in chemistry, physics, and mathematics. The first two years are devoted to a study of the pure sciences and the essential communication skills. In the last two years emphasis is placed upon the application of these sciences through the study of transport processes, separation techniques, thermodynamics, reaction engineering, process dynamics, and systems design.

Dual degree program. The Department of Chemical Engineering also offers a five-year dual degree program in chemistry-chemical engineering. The program may be pursued entirely at KSU, requiring a minimum of 150 credit hours, or a portion of the requirements may be completed at other colleges. In particular, a formal cooperative program exists between KSU and Pittsburg State University in which the student spends the first three years at PSU and the last two at KSU. Graduates of this program are especially well suited for work in the chemical industries or for graduate study in either field. Other dual degree programs also are available.

Chemical engineering options. While students must satisfy the engineering science requirements in selecting technical electives, they are encouraged to do so with their career goals in mind. If a student wishes to emphasize a particular area, such as **biochemical, computer and systems, materials, energy** and **environmental** engineering, lists of recommended technical electives are available in the department office. The Interdisciplinary Studies section of this catalog describes opportunities for chemical engineering students interested in business administration, pre-medicine, pre-law, mathematics, physics, and chemistry. Students should consult with the academic advisor in selecting technical electives.

Graduate study

Major work leading to the master of science and doctor of philosophy degrees in several areas is offered. Research in transport phenomena, reaction engineering, diffusional processes, thermodynamics, process dynamics, optimization techniques, and process development is underway, and new fields of research are being developed. Support for this research comes from federal, state, and industrial sources. Laboratory space, equipment, and instruments are available for this research. The department has shop facilities in which unusual equipment is built and repaired. A glassblower is available on the campus, and the College of Engineering and the University computing centers are used extensively by graduate students.

Curriculum in chemical engineering (CHE)

Bachelor of Science in Chemical Engineering
134 hours required for graduation

Freshman

Fall semester	Course	Sem. hrs.
ENGL 100	English Composition I	3
CHM 210	Chemistry I	4
MATH 220	Analytic Geometry & Calculus I	4
ECON 110	Economics I	3
SPCH 105	Oral Communication I	2
PE 101	Concepts in Physical Education	1
CHE 015	Engineering Assembly	0
		17
Spring semester		
ENGL 120	English Composition II*	
	or	
	Humanities or social science electives	3
CHM 230	Chemistry II	4
CHM 271	Chemical Analysis	4
MATH 221	Analytic Geometry & Calculus II	4
	Elective	3
CHE 015	Engineering Assembly	0
		18

Sophomore

Fall semester		
MATH 222	Analytic Geometry & Calculus III	4
PHYS 213	Engineering Physics I	5
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry I Lab	2
	Elective	3
CHE 015	Engineering Assembly	0
		17
Spring semester		
MATH 240	Elementary Differential Equations	4
PHYS 214	Engineering Physics II	5
CHM 550	Organic Chemistry II	3
CHE 314	Introduction to Process Analysis	3
CHE 316	Chemical Engineering Computational Techniques	1
CHE 015	Engineering Assembly	0
		16

Junior

Fall semester		
CHM 585	Physical Chemistry I	3
CHM 586	Physical Chemistry I Lab	2
CHE 520	Chemical Engineering Thermodynamics I	2
CHE 530	Transport Phenomena I	3
	Elective	6
CHE 015	Engineering Assembly	0
		16
Spring semester		
CHM 595	Physical Chemistry II	3
ENGL 415	Written Communication for Engineers	3
CHE 522	Chemical Engineering Lab I	2
CHE 521	Chemical Engineering Thermodynamics II	3
CHE 531	Transport Phenomena II	3
	Elective	3
CHE 015	Engineering Assembly	0
		17

Senior

Fall semester		
CHE 532	Chemical Engineering Lab II	2
CHE 560	Separational Process Design	2
CHE 561	Chemical Process Dynamics & Control	2
CHE 550	Chemical Reaction Engineering	3
CHE 570	Chemical Engineering Systems Design I	2
	Elective	6
CHE 015	Engineering Assembly	0
		17
Spring semester		
CHE 542	Chemical Engineering Lab III	3
CHE 571	Chemical Engineering Systems Design II	4
	Elective	9
CHE 015	Engineering Assembly	0
		16

*English Composition II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from English Composition I.

A total of 33 hours of electives is required and they are to be selected in consultation with the student's advisor. Fifteen of these hours are to be selected from the approved list of humanities and social sciences, nine hours must satisfy the engineering science requirements, and the remaining nine hours are selected to enhance the student's professional development.

Courses in chemical engineering
Undergraduate credit

CHE 015. Engineering Assembly. (0) I, II. CHE-015-0-0906

CHE 314. Introduction to Process Analysis. (3) I, II, S. An introduction to the basic concepts of chemical engineering. Three hours rec. a week. Pr. or conc.: MATH 240 and CHE 316. CHE-314-0-0906

CHE 316. Chemical Engineering Computational Techniques. (1) I, II, S. Application of digital and analog computers, graphical methods, and statistics to chemical engineering problems. Three hours lab a week. Pr. or conc.: CHE 314 and MATH 240. CHE-316-1-0906

CHE 350. Engineering Materials. (2) I, II. Engineering requirements of materials; arrangements of atoms in materials; metallic and ceramic phases and their properties; polymers; multiphase equilibrium and non-equilibrium relationships; modification of properties through changes in microstructure; stability under service stresses, thermal behavior in service; corrosion; behavior in electromagnetic fields; effects of radiation on materials. Two hours rec. a week. Pr.: CHM 230. Pr. or conc.: PHYS 213. CHE-350-0-0913

CHE 352. Engineering Materials I. (3) I, II, S. Engineering requirements of materials; arrangements of atoms in materials; metallic and ceramic phases and their properties; polymers; multiphase equilibrium and non-equilibrium relationships; modification of properties through changes in microstructure; stability under service stresses, thermal behavior in service; corrosion behavior in electromagnetic fields; effects of radiation on materials. Two hours rec. and three hours lab a week. Pr.: CHM 230. Pr. or conc.: PHYS 213. CHE-352-1-0913

CHE 499. Honors Research in Chemical Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering Honors Program. A report is presented orally and in writing during the last semester. CHE-499-4-0906

Undergraduate and graduate credit in minor field

CHE 520. Ch.E. Thermodynamics I. (2) I. A study of the first and second laws of thermodynamics, real gases, heat of solution and reaction. Two hours rec. a week. Pr. or conc.: CHE 314 and CHM 585. CHE-520-0-0906

CHE 521. Ch.E. Thermodynamics II. (3) II. A continuation of the study of the second law, thermodynamic analysis of processes, phase equilibrium, chemical reaction equilibrium. Three hours rec. a week. Pr.: CHE 520. CHE-521-0-0906

CHE 522. Chemical Engineering Laboratory I. (2) II. Principles and techniques of physical measurements such as temperature, pressure, and concentration; basic principles of momentum transfer, heat transfer, and mass transfer; experiments in classical unit operations, e.g., distillation, evaporation, drying, fluidization, and in chemical kinetics, thermodynamics, and process dynamics. Five hours lab a week. Pr.: CHE 520. Pr. or conc.: CHE 530. CHE-522-1-0906

CHE 530. Transport Phenomena I. (3) I. A unified treatment of the basic principles of momentum, energy, and mass transport. Three hours rec. a week. Pr. or conc.: CHE 314. CHE-530-0-0906

CHE 531. Transport Phenomena II. (3) II. Continuation of Transport Phenomena I with special emphasis on mass transfer. Three hours rec. a week. Pr.: CHE 530. CHE-531-0-0906

CHE 532. Chemical Engineering Laboratory II. (2) I. Continuation of Chemical Engineering Laboratory I. Five hours lab a week. Pr.: CHE 522. CHE-532-1-0906

CHE 542. Chemical Engineering Laboratory III. (3) II. Continuation of Chemical Engineering Laboratory II. Eight hours lab a week. Pr.: CHE 532 and CHE 561. CHE-542-1-0906

CHE 550. Chemical Reaction Engineering. (3) I. Applied chemical kinetics and catalysis including the analysis and design of tubular, packed bed, stirred tank, and fluidized bed chemical reactors. Three hours rec. a week. Pr.: CHE 521 and CHE 531. CHE-550-0-0906

CHE 560. Separational Process Design. (2) I. Development of the basic theory and design of separational processes such as distillation, gas absorption, liquid extraction, adsorption and ion exchange. Two hours rec. a week. Pr.: CHE 521 and CHE 531. CHE-560-0-0906

CHE 561. Chemical Process Dynamics and Control. (2) I. A study of the unsteady state behavior and control of chemical processes. Two hours rec. a week. Pr. or conc.: CHE 550. CHE-561-0-0906

CHE 570. Chemical Engineering Systems Design I. (2) I. Basic concepts of process economics with application to the design of chemical processes. Two hours rec. a week. Pr. or conc.: CHE 550 and CHE 560. CHE-570-1-0906

CHE 571. Chemical Engineering Systems Design II. (4) II. Basic concepts of process optimization with application to the synthesis and design of chemical processing systems. Emphasis will be placed on the solution of comprehensive systems design problems. Two hours rec. and six hours lab a week. Pr.: CHE 550, CHE 560, CHE 561, and CHE 570. CHE-571-1-0906

CHE 580. Problems in Chemical Engineering or Materials Science. (Var.) I, II, S. An introduction to chemical engineering research. Pr.: Approval of department head. CHE-580-4-0906

Undergraduate and graduate credit

CHE 655. Metal Casting. (3) II. An advanced course in the materials and metals used in modern metal casting processes. Application of metallurgical principles in the study of cast metals. Two hours rec. and three hours lab a week. Pr.: IE 241 and CHE 350. CHE-655-1-0913

CHE 664. Electrochemical Behavior of Metals. (3) I. The electrochemical processes involved in corrosion of metals and the basic factors determining the nature and rate of attack; consideration of corrosion problems and methods of combating corrosion. Two hours rec. and three hours lab a week. Pr.: CHM 230, PHYS 213. CHE-664-1-0913

CHE 681. Engineering Materials II. (3) I, II, S. The structure and bonding in crystalline and amorphous materials; crystallography; thermodynamic stability in materials; equilibrium diagrams and the phase rule; rate theory and kinetics of solid-state transformations; mechanical behavior of engineering materials; dislocations; failure mechanisms. Three hours lec. a week. Pr.: CHE 350 or CHE 352. CHE-681-0-0913

CHE 682. Surface Phenomena. (2) I, II, S. Principles and applications of interfacial phenomena; including capillarity, porosity, adsorption, and catalysis. Two hours rec. a week. Pr.: CHE 520. CHE-682-0-0906

CHE 715. Biochemical Engineering. (3) I. The analysis and design of biochemical processing systems with emphasis on fermentation kinetics, continuous fermentations, aeration, agitation, scale up, sterilization, and control. Three hours rec. a week. Pr. or conc.: CHE 550. CHE-715-0-0906

CHE 725. Biotransport Phenomena. (3) I, II. Principles of transport phenomena applied to biological and physiological processes. Membrane transport processes, circulatory system transport phenomena, transport and distribution of drugs. Pr.: CHE 530. CHE-725-0-0906

CHE 735. Chemical Engineering Analysis I. (3) I, II, S. The mathematical formulation of problems in chemical engineering using partial differential equations, vector and tensor notation. Solution of these problems by graphical, numerical, and transform methods. Three hours rec. a week. Pr.: CHE 530. CHE-735-0-0906

CHE 745. Analysis of Physiological Processes. (3) II. Principles of process and systems analysis applied to problems in biology and medicine. Analysis of mixing in-flow systems, principles and applications of tracer analysis, analysis of kinetic and adsorption processes. Pr.: CHE 550. CHE-745-0-0906

CHE 795. Separation of Nuclear Fuels. (4) II. A graduate level course investigating the chemical properties, the methods of separation, purification and reprocessing of uranium, thorium, and plutonium. Three hours rec. and three hours lab a week. Pr.: NE 613 or CHE 560 (Cross-listed with NE 795). CHE-795-1-0906

Graduate credit

CHE 802. Selected Topics in Materials Science. (Var.) I, II, S. Areas of current interest in materials including solidification, transformations, solutions, dislocations, creep, fracture, failure analysis, and failure prevention. Pr.: CHE 681. CHE-802-4-0913

CHE 805. Selected Topics in Biochemical Engineering. (3) II, S. Subjects of current interest in the broadest sense of biochemical engineering. These involve not only chemical engineering problems which contain biochemical, biological, or medical elements but also applications of chemical engineering principles and methodologies to biochemical, biological, medical, and ecological problems. Pr.: CHE 715. CHE-805-0-0906

CHE 810. Research in Chemical Engineering. (Var.) I, II, S. Original investigations in transport phenomena, unit operations, thermodynamics, process dynamics, applied chemical kinetics, and process development. The results of these investigations may be used for the master's thesis or the doctoral dissertation. CHE-810-4-0906

CHE 815. Advanced Chemical Engineering Thermodynamics. (3) I, II, S. Advanced topics in thermodynamics, with emphasis on chemical and physical equilibria and the estimation of thermodynamic properties. Three hours rec. a week. Pr.: Graduate standing in chemical engineering. CHE-815-0-0906

CHE 822. Advanced Chemical Reaction Engineering. (3) I, II, S. Theory of kinetics and catalysis in homogeneous and heterogeneous systems, with applications in chemical reactor design and process development. Three hours rec. a week. Pr.: CHE 550. CHE-822-0-0906

CHE 826. Advanced Unit Operations I. (3) I, II, S. Advanced study of mass transfer operations. Three hours rec. a week. Pr.: CHE 560. CHE-826-0-0906

CHE 832. Advanced Unit Operations II. (3) I, II, S. Advanced study of the operations involving mechanical separation of materials. Three hours rec. a week. Pr.: CHE 560. CHE-832-0-0906

CHE 850. Advanced Chemical Process Dynamics. (3) I, II, S. The dynamical behavior of chemical reaction systems and process equipment used in chemical plants. Control mechanisms for these systems. Three hours rec. a week. Pr.: Graduate standing in chemical engineering. CHE-850-0-0906

CHE 862. Advanced Transport Phenomena I. (3) I, II, S. Advanced treatment of momentum, energy, and mass transport, with emphasis on momentum transport in chemical engineering applications. Three hours rec. a week. Pr.: CHE 735. CHE-862-0-0906

CHE 867. Advanced Transport Phenomena II. (3) I, II, S. Advanced treatment of momentum, energy, and mass transport, with emphasis on energy and mass transport in chemical engineering applications. Three hours rec. a week. Pr.: CHE 862. CHE-867-0-0906

CHE 871. Advanced Process Design and Optimization. (3) I, II, S. Advanced problems in the optimal design and economic evaluation of plant equipment and processes for the chemical and allied industries. Three hours rec. a week. Pr.: CHE 571, CHE 735. CHE-871-0-0906

CHE 875. Graduate Seminar in Chemical Engineering. (1) I, II. Discussion of current advances and research in chemical engineering and related fields. CHE-875-0-0906

CHE 898. Master's Report. (Var.) I, II, S. Topics selected with approval of department head and major professor. CHE-898-4-0906

CHE 899. Master's Thesis. (Var.) I, II, S. Topics selected with approval of department head and major professor. CHE-899-4-0906

CHE 901. Selected Topics in Reaction Engineering. (3) I, II, S. Advanced study in this field of such topics as complex reactions, catalysis, dispersion effects, fast reactions, reactions in fluidized beds. Three hours rec. a week. Pr.: CHE 822 and one course in chemical engineering numbered 851 or higher. CHE-901-0-0906

CHE 910. Selected Topics in Transport Phenomena. (3) I, II, S. Subjects of current interest such as surface phenomena, turbulent transport, droplet mechanics, multi-component systems. Three hours rec. a week. Pr.: CHE 867. CHE-910-0-0906

CHE 915. Selected Topics in Process Dynamics. (3) I, II, S. Study of the most recent methods for analysis of the dynamic behavior and control of complex systems and industrial processes. The use of Lyupanov theorems and the maximum principle are examples of the methods to be studied. Three hours rec. a week. Pr.: CHE 850 and one graduate course in chemical engineering numbered 851 or higher. CHE-915-0-0906

CHE 920. Selected Topics in Unit Operations. (3) I, II, S. Study of such topics as zone melting, foam fractionation, membrane permeation, thermal diffusion, and unsteady state operations. Three hours rec. a week. Pr.: CHE 826 or CHE 832 and one course in chemical engineering numbered 851 or higher. CHE-920-0-0906

CHE 925. Selected Topics in Process Design and Optimization. (3) I, II, S. Study of advanced methods of process design and optimization, such as modern variational methods and dynamic programming. Applications to be chosen mainly from the chemical and allied industries to include stochastic as well as deterministic problems. Three hours rec. a week. Pr.: CHE 871. CHE-925-0-0906

CHE 930. Selected Topics in Thermodynamics. (3) I, II, S. Advanced study in this field of such topics as irreversible thermodynamics, solution theory, and surface phenomena. Three hours rec. a week. Pr.: CHE 815 and one course in chemical engineering numbered 851 or higher. CHE-930-0-0906

CHE 999. Dissertation Research. (Var.) I, II, S. Topics selected with approval of department head and major professor. CHE-999-4-0906

Civil Engineering

Robert R. Snell,* head of department

Professors Best,* Cooper,* Koelliker,* Russell,* Smith,* Snell,* Swartz,* and Williams;* Associate Professors Hu* and Knostman;* Assistant Professors Mathews and McEnroe;* Emeriti: Professors McCormick, Morse, Munger, Rosebraugh, and Taylor; Assistant Professor Crary.

Undergraduate study

Civil engineering is the engineering of constructed facilities and systems. Because civil engineering is so broad in scope, it has become desirable for many civil engineers to develop specialties within the broad field. As a means of satisfying that desire for specialization the civil engineering department offers three options within the B.S. in civil engineering degree.

The general option allows the student to pursue a B.S. in civil engineering degree in a broad general program or if a specific career objective has been identified to concentrate on one or more areas within the general option. The following areas of concentration are available:

Hydraulics—design and construction of reservoirs, canal systems and dams for flood control, irrigation, power, and water supply.

Soils and Foundations—foundations for structures, earth embankments, retaining walls and bulkheads, and pavements for highways and airports.

Environmental—protection of public health and environmental quality through the planning and designing of facilities for water treatment and distribution; wastewater, solid and hazardous wastes collection, treatment and disposal; and air pollution control.

Transportation—planning, design and construction of highways, railways, airports, and urban mass transit systems.

Structures—design and construction of a wide variety of buildings and bridges, as well as the structural framing of aircraft, ships, and space vehicles.

The **construction engineering option** allows the student to pursue a B.S. in civil engineering program while preparing specifically for employment in the construction industry.

The **geological engineering option** allows the student to pursue a B.S. in civil engineering program while preparing specifically to deal with the geologic factors affecting the location, design and construction of foundations, excavations, tunnels, dams, reservoirs, and canals. They are also prepared to assist in the search for and development of metallic ores, industrial minerals and rocks, petroleum and natural gas, and groundwater supplies.

Graduate study

Major work leading to the master of science and doctor of philosophy degree is offered in the areas of specialization in structural analysis and design, soil mechanics and foundations, hydraulic engineering, sanitary/environmental engineering, highway and traffic engineering, and transportation planning. Laboratory facilities for advanced study and research are available in the areas of structures, soil mechanics, hydraulics; sanitary engineering and transportation.

Curriculum in civil engineering (CE)

Bachelor of Science in Civil Engineering
134 hours required for graduation

Freshman

Fall semester	Course	Sem. hrs.
MATH 220	Analytic Geometry & Calculus I	4
CHM 210	Chemistry I	4
ENGL 100	English Composition I	3
ECON 110	Economics I	3
ME 212	Engineering Graphics I	2
PE 101	Concepts in Physical Education	1
		17
Spring semester		
MATH 221	Analytic Geometry & Calculus II	4
CHM 230	Chemistry II	4
ENGL 120	English Composition II*	
	or	
	Humanities or social science electives	3
SPCH 105	Oral Communication I	2
GEOL 100	Introductory Geology	3
CE 015	Engineering Assembly	0
		16

Sophomore

Fall semester		
MATH 222	Analytic Geometry & Calculus III	4
PHYS 213	Engineering Physics I	5
	Option elective	3
IE 372	Computer & Data Processing	2
CE 212	Elementary Surveying Engineering	3
CE 015	Engineering Assembly	0
		17
Spring semester		
MATH 240	Elementary Differential Equations	4
PHYS 214	Engineering Physics II	5
CE 333	Statics	3
	Option electives	2-3
	Technical electives	2-3
CE 015	Engineering Assembly	0
		17

Junior

Fall semester		
CE 411	Route Location & Design	4
ME 512	Dynamics	3
ME 513	Thermodynamics I	3
CE 551	Hydrology	2
CE 553	Hydrologic Methods Lab	1
CE 533	Mechanics of Materials	3
CE 534	Mechanics of Materials Lab	1
CE 015	Engineering Assembly	0
		17
Spring semester		
CE 537	Introduction to Structural Analysis	4
ME 571	Fluid Mechanics	3
CE 522	Soil Mechanics I	3
CE 563	Sanitary Engineering Fundamentals	3
ENGL 415	Written Communication for Engineers	3
CE 015	Engineering Assembly	0
		16

Senior

Fall semester		
CE 015	Engineering Assembly	0
	Option elective	5
	Civil Engineering electives	7
	Humanities or social science electives	5
		17

Spring semester

CE 015	Engineering Assembly	0
	Civil Engineering electives	5
	Humanities or social science electives	6
	Option elective	6
		17

*English Composition II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from English Composition I.

Humanities and social science electives are to be selected from the catalog list and need not be taken in the order listed in the curriculum.

One course in computer programming or equivalent programming experience, one course from the math-statistics group and one course from either the engineering materials or the circuits, fields and electronics engineering science group are required. The remaining hours may be chosen upon consultation with the student's faculty advisor from the areas of mathematics, science or engineering.

Option electives are to be selected in consultation with the student's faculty advisor to satisfy the requirements of the concentration the student has chosen.

Civil engineering electives are to be selected from the list approved by the department.

Civil engineering options

General

In the general option the student may select a set of interrelated technical and civil engineering electives which will enable the student to complete a broad general program or to concentrate on one or more areas within the general option. The areas of concentration available are structural analysis and design, soil mechanics and foundations, hydraulic engineering, sanitary/environmental engineering, and highway and traffic engineering.

Construction engineering

A student pursuing the construction engineering option within the Department of Civil Engineering can fulfill the requirements for a B.S. in civil engineering by following the outlined course curriculum listed for civil engineering as well as the following selection of option electives:

DEN 450	Engineering Law	3
	Management elective	3
CE 680	Economics of Design & Construction	3
ACCTG 211	Financial Accounting	3
ACCTG 221	Managerial Accounting	3
	Elective	2

Geological engineering

A student pursuing the option of geological engineering with the Department of Civil Engineering can fulfill the requirements for a B.S. in civil engineering by following the outlined course curriculum for civil engineering as well as the following selection of option electives:

GEOL 130	Elementary Geology Lab	1
GEOL 200	Historical Geology	4
GEOL 502	Mineralogy and Petrology I	4
GEOL 503	Mineralogy and Petrology II	4
GEOL 530	Structural Geology	4

Courses in civil engineering

Undergraduate credit

CE 015. Engineering Assembly. (0) I, II. CE-015-0-0908

CE 212. Elementary Surveying Engineering. (3) I, II. Coordinates, directions, distances, and elevation. Traverses. Boundary surveys. Leveling. National rectangular coordinate systems. Property descriptions: public land subdivision and metes and bounds. Topographic surveys. Surveying, planning, and estimating. One hour lec. and six hours lab a week. Pr.: MATH 150. CE-212-1-0908

CE 231. Statics A. (3) I, II. Composition and resolution of forces; equilibrium of force systems; application of the principles of statics to problems, including force analyses of simple structures. Centroids; moments of inertia. Three hours rec. a week. Pr.: PHYS 113 and MATH 220 or conc.: MATH 211. CE-231-0-0999

CE 322. Soil and Foundation Construction. (3) II. The origin, distribution, and predictable variation of soil; soil testing and mechanics as applied to practical problems; soil investigations; foundation types, application and construction; ground water, drainage, and dewatering; earth moving including stable cuts in embankments. Not open to engineering students. Two hours rec. and three hours lab a week. Pr. or conc.: GEOL 100. CE-322-0-0908

CE 331. Strength of Materials A. (3) I, II. Behavior of materials subjected to tension, compression, shear, and bending; design of beams and columns. Three hours rec. a week. Pr.: CE 231. CE-331-0-0999

CE 332. Strength of Materials A Laboratory. (1) I, II. Tests to determine the physical properties of various structural materials, including steel, aluminum, wood, and concrete. Analysis and interpretation of test data. Three hours lab a week. Pr. or conc.: CE 331. CE-332-1-0999

CE 333. Statics. (3) I, II, S. Composition and resolution of forces; equilibrium of force systems; application of general laws of statics to engineering problems, including use of vector algebra, friction and force analyses of simple structures, cables, and machine elements; center of gravity; moments of inertia. Three hours rec. a week. Pr.: MATH 221 and PHYS 213. CE-333-0-0999

CE 411. Route Location and Design. (4) I, II. Transportation systems; highway location and the geometric design of streets and highways considering the driver-vehicle-roadway system characteristics; curves and earthwork; surveying pertaining to the alignment of highways and railways. Two hours rec. and six hours lab a week. Pr.: CE 212, MATH 221, and PHYS 213. CE-411-1-0908

CE 499. Honors Research in Civil Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering Honors Program. A report is presented orally and in writing during the last semester. CE-499-4-0904

Undergraduate and graduate credit in minor field

CE 522. Soil Mechanics I. (3) I, II. Identification, classification, and engineering properties of soils; theory and application of consolidation, compressibility, and strength of soils; ground water retention and movement; slope stability and lateral earth pressures; stress distribution in soil. Two hours rec. and three hours lab a week. Pr.: CE 533. CE-522-1-0908

CE 528. Foundation Engineering. (3) II. Prediction of soil variation; soil investigations; stress distribution and bearing capacity; dewatering analysis and procedures; retaining structures and lateral earth pressures; shallow foundations, pile foundations; underpinning and grouting. Two hours rec. and three hours lab a week. Pr.: CE 522. Pr. or conc.: CE 544. CE-528-1-0908

CE 530. Statics and Dynamics. (4) I, II. A shortened combined course in (1) Statics, including a study of force systems, free-body diagrams, and problems in equilibrium, friction, centroids, and moments of inertia; and (2) Dynamics, including a study of the kinematics and kinetics of particles and rigid bodies using the methods of force-mass acceleration, work-energy, and impulse-momentum. Four hours rec. a week. Pr.: MATH 222 and PHYS 213. CE-530-0-0999

CE 533. Mechanics of Materials. (3) I, II. Elementary theories of stress and strain, behavior of materials, and applications of these theories and their generalizations to the study of stress distribution, deformation, and instability in the simple structural forms which occur most frequently in engineering practice. Three hours rec. a week. Pr.: CE 333 or CE 530. Pr. or conc.: MATH 222. CE-533-0-0999

CE 534. Mechanics of Materials Laboratory. (1) I, II. Determination of selected mechanical properties of several engineering materials, including iron-carbon alloys, aluminum alloys, concrete, wood, and plastics; relationship between structure and mechanical properties of these materials; elementary problems in experimental stress analysis and structural behavior; test procedures, instrumentation, and interpretation of results. One hour lab instruction and two hours lab a week. Pr. or conc.: CE 533. CE-534-1-0999

CE 537. Introduction to Structural Analysis. (4) I, II. Elastic analysis of beams, frames, and trusses; calculation of influence lines and deflections; introduction to the displacement method using matrix algebra. Four hours rec. a week. Pr.: CE 533. CE-537-0-0908

CE 542. Structural Engineering in Steel. (3) II. Introduction to design of steel structures. Theoretical, experimental, and practical bases for proportioning members and their connections. Two hours rec. and three hours lab a week. Pr.: CE 537. CE-542-1-0908

CE 544. Structural Engineering in Concrete. (3) I. A study of the theories of reinforced concrete and of its characteristics as a construction material; design of reinforced concrete structures. Two hours rec. and three hours lab a week. Pr. or conc.: CE 537. CE-544-1-0908

CE 551. Hydrology. (2) I, II. A study of the sources of supply and movement of underground and surface waters. Two hours rec. a week. Pr.: PHYS 113 or PHYS 213. (Cross listed with AE 551.) CE-551-0-0908

CE 552. Hydraulic Engineering. (3) I. Applications of the principles of fluid mechanics to control and utilization of water; reservoir, dam, and spillway design; enclosed conduit and open-channel design; hydraulic machinery and hydro-power development; principles of fluid measurement; laboratory—flow and velocity metering, hydraulic models, pipe losses, open-channel flow. Two hours rec. and three hours lab a week. Pr.: ME 571. Pr. or conc.: CE 551. CE-552-1-0908

CE 553. Hydrologic Methods Laboratory. (1) I. Application of hydrologic methods in design; precipitation data analysis; evapotranspiration; streamgauging; hydrograph generation and flood routing; rainfall and flood frequency analysis; design of multi-purpose reservoirs; ground water flow analysis and water well design. Three hours lab a week. Pr. or conc.: CE 551 and IE 372. CE-553-1-0908

CE 563. Environmental Engineering Fundamentals. (3) I, II. Basic physical, chemical, and biological concepts and their applications to the protection of the environment with emphasis on techniques used in water and wastewater treatment. Two hours rec. and three hours lab a week. Pr.: CHM 230. CE-563-1-0908

CE 565. Water and Wastewater Engineering. (3) II. Design of water supply and waste treatment control facilities, including collection, storage, treatment, and distribution systems. Two hours rec. and three hours lab a week. Pr.: CE 563 and PHYS 114 or PHYS 214. CE-565-1-0908

CE 571. Transportation Engineering. (3) I. The development, economic feasibility, method of financing, location, geometric design, and operational analysis of transportation systems. Two hours rec. and three hours lab a week. Pr.: CE 411 and junior standing. CE-571-1-0908

CE 585. Civil Engineering Project. (1-3) I, II. A laboratory design or research problem selected by the student. Requires a review of the literature, the preparation of a proposal which describes the project, the completion of the design or research, and the preparation of a report. Maximum credit hours: 3. May be substituted for a required senior design course on recommendation of instructor and approval of the department head. CE-585-2-0908

Undergraduate and graduate credit

CE 620. Geological Engineering. (3) I. Application of Geology and Civil Engineering in the design of subsurface exploration programs; excavation and evaluation of construction materials; regional planning and environmental policy; rock slopes; foundations on rock. Legal liability and selected case studies will be included. Two hours rec. and three hours lab a week. Pr.: CE 528 and GEOL 530. CE-620-0-0908

CE 641. Civil Engineering Materials. (3) I. Properties and behavior of structural metals, timber, portland cement concrete, and bituminous concrete; standard specifications and methods of test; inspection and control; long-term protection and durability. Two hours rec. and three hours lab a week. Pr.: CE 534 and Pr. or conc.: CE 528 or CE 542 or CE 544. CE-641-1-0908

CE 675. Traffic Engineering I. (3) I. Driver, vehicle, and roadway characteristics; speed and volume studies; congestion and accident studies; signs, signals, and pavement marking as traffic control devices; parking studies, screenline and corridor analyses; highway and intersection capacity. Two hours rec. and three hours lab a week. Pr.: CE 411. CE-675-1-0908

CE 680. Economics of Design and Construction. (3) II. Selection of alternative engineering design and construction solutions through study of unit cost determination, cost estimating, and financing procedures. Introduction to construction scheduling. Three hours rec. a week. Pr.: Senior standing in engineering or graduate standing for non-engineering majors. CE-680-0-0908

CE 686. Regional Planning Engineering. (3) I. Engineering problems involved in regional planning; the design and location of streets and highways, water supply and sanitary facilities, drainage and public utilities; rights-of-way and easement. Two hours rec. and three hours lab a week. Pr.: Senior standing in engineering or graduate standing in regional and community planning. CE-686-1-0908

CE 718. Engineering Photo Interpretation. (3) II. Photo interpretation techniques, types of aerial photographic film and their uses; application in land use studies, land surveying, site selection, rainfall runoff and stream flow, location of construction materials, and in the determination of soil properties; other applications. Two hours rec. and three hours lab a week. Pr.: Senior standing and consent of instructor. CE-718-1-0908

CE 722. Soil Mechanics II. (3) I. Review of identification, classification, and engineering properties of soils; stress distribution in the soil; advanced study of strength and compressibility of soil, and of soil moisture and ground water movement. Three hours rec. a week. Pr.: CE 522. CE-722-0-0908

CE 724. Advanced Soil Testing for Engineering Purposes. (3) II. Physical characteristics and classification of soil materials; consolidation and compressibility tests; unconfined, direct, and triaxial shear tests. One hour rec. and six hours lab a week. Pr.: CE 522. CE-724-1-0908

CE 728. Advanced Foundation Engineering. (3) II. Advanced studies of soil investigations; analysis and design of retaining structures, shallow foundations, pile foundations, and dewatering systems; analysis and repair of failed structures; legal aspects of foundation engineering. Two hours rec. and three hours lab a week. Pr.: CE 544 and CE 528. CE-728-1-0908

CE 730. Advanced Mechanics of Materials. (3) I. Introduction to advanced problems in the elastic regime. Biaxial stress and strain, theories of failure, flexure, torsion, membrane theory of shells, beams on elastic foundations, thick cylinders and rotating disks, energy methods, and buckling. Three hours rec. a week. Pr.: CE 533, MATH 240. CE-730-0-0999

CE 732. Advanced Structural Analysis I. (3) I. Classical methods of analysis of statically indeterminate structures; deflections and influence lines for indeterminate structures; analysis of space frames and trusses. Three hours rec. a week. Pr.: CE 537. CE-732-0-0908

CE 733. Advanced Structural Analysis II. (3) II. Application of matrix methods of analysis to complex structures; selected topics in structural analysis. Three hours rec. a week. Pr.: CE 537. CE-733-0-0908

CE 735. Numerical Solutions in Structural Mechanics. (3) I. In alternate years. Theory of finite element, finite difference, numerical integration and other numerical techniques, and application to problems in structural mechanics. Three hours rec. a week. Pr.: CE 537. CE-735-0-0908

CE 736. Energy Methods in Engineering Mechanics. (3) II. In alternate years. The principle of virtual work, minimum potential energy; theorem of complementary energy; Castigliano's theorems; application of statically determinate and indeterminate beams, curved beams, and frames; extension of energy principles of statics to dynamic problems. Three hours rec. a week. Pr.: CE 533. CE-736-0-0999

CE 737. Elastic Stability. (3) II. In alternate years. Bending of prismatic bars under simultaneous action of axial and lateral loads; buckling of centrally compressed bars; buckling of compressed rings and curved bars; lateral buckling of beams. Three hours rec. a week. Pr.: CE 533, MATH 240. CE-737-0-0999

CE 742. Advanced Steel Design. (3) II. Plastic design of steel structures; stability problems in plastic design; design of complex steel structures. Three hours rec. a week. Pr.: CE 542. CE-742-0-0908

CE 743. Advanced Reinforced Concrete Theory. (3) II. Advanced theories and methods of design and analysis of reinforced concrete structures. Three hours rec. a week. Pr.: CE 544. CE-743-0-0908

CE 744. Prestressed Concrete Design. (3) I. The study of prestressing methods and their application to the design of concrete structures. Three hours rec. a week. Pr.: CE 544. CE-744-0-0908

CE 751. Hydraulics of Open Channels. (3) I. Properties of open-channel flow; types of open channels; conservation of mass, momentum, and energy; critical, uniform, and gradually varied flow; design of erodible channels; rapidly varied flow. Three hours rec. a week. Pr.: CE 552. CE-751-0-0908

CE 752. Advanced Hydrology. (3) II. Review basic principles; point and regional rainfall and flood frequency analyses; hydrologic and hydraulic flood routing; drainage and flood control facilities design; hydrologic modeling and simulation; flood plain analysis and planning. Three hours rec. a week. Pr.: CE 551. CE-752-0-0908

CE 761. Environmental Engineering Chemistry. (3) I. Basic concepts of chemical reaction kinetics and equilibria, acid-base chemistry, complex formation, precipitation and dissolution processes, and applications to environmental engineering organic compounds in the environment. Three hours rec. a week. Pr.: CE 563 or consent of instructor. CE-761-0-0908

CE 762. Water Treatment Systems. (3) II. Drinking water quality and health effects; indepth study of physical and chemical principles in water treatment unit operations, and their application to plant design. Three hours rec. a week. Pr.: CE 565, CE 761 or consent of instructor. CE-762-0-0908

CE 763. Water Supply and Wastewater Collection. (3) II. Alternate years. Analysis and design of water distribution systems, pump stations and storage systems; flow measurement devices; analysis and design of wastewater collection systems and pump stations. Three hours rec. a week. Pr.: CE 552, CE 565 or consent of instructor. CE-763-0-0908

CE 766. Wastewater Engineering I: Biological Processes. (3) I. Principles of biological treatment of wastewater and sludge; application to the design of facilities for organics and nutrient removal; sludge handling, treatment and disposal. Three hours rec. a week. Pr.: CE 565, or permission of instructor. CE-766-0-0908

CE 767. Wastewater Engineering II: Physical and Chemical Processes. (3) II. In alternate years. Physical and chemical principles in the removal of suspended solids, organics and nutrients using sedimentation, filtration, chemical precipitation, oxidation, adsorption, ion-exchange, and other processes. Three hours rec. a week. Pr.: CE 565, CE 761 or permission of instructor. CE-767-0-0908

CE 771. Urban Transportation Analysis. (3) I. Origin-destination surveys, land-use inventories, parking and transit studies; arterial street standards and operating characteristics, coordination of city planning. Two hours rec. and three hours lab a week. Pr.: CE 571 or consent of instructor. CE-771-1-0908

CE 790. Problems in Civil Engineering. (Var.) I, II, S. Pr.: Approval of instructor. CE-790-3-0908

Graduate credit

CE 791. Research in Civil Engineering. (Var.) I, II, S. Original investigation or advanced study in some field related to the practice of civil engineering. Pr.: Approval of department head. CE-791-3-0908

CE 822. Soil Mechanics of Embankments. (3) I. Application of soil mechanics to cutting and filling operations for the construction of embankments, soil investigations, slope stability, stability and settlement of embankments, structures in embankments. Water control in and through embankments. Two hours rec. and three hours lab a week. Pr. or conc.: CE 722. CE-822-1-0908

CE 823. Engineering Properties of Cohesive Soils. (3) I. Mineralogy and structures of clay minerals; fabric and bonding of the clay particles; compressibility and strength characteristics of clays; moisture effects, retention and movement through clay. Two hours rec. and three hours lab a week. Pr. or conc.: CE 722. CE-823-1-0908

CE 835. Structural Dynamics. (3) I. In alternate years. Analysis of structures subjected to dynamic loading. Three hours rec. a week. Pr.: CE 735. CE-835-0-0908

CE 838. Theory of Plates and Shells. (3) I. In alternate years. Equations for bending of thin plates, symmetrical bending of circular plates, simply supported rectangular plates; rectangular plates with various edge conditions, plates of various shapes. Membrane theory for cylindrical shells, shells of revolution, other shells. Introduction to bending theory of shells. Three hours rec. a week. Pr.: CE 730. CE-838-0-0999

CE 849. Design of Shell Structures. (3) II. In alternate years. Review of membrane theory and bending theory for cylindrical shells, shells of revolution, and folded plate shells. The design of reinforced concrete shell structures. Three hours rec. a week. Pr.: CE 838. CE-849-0-0908

CE 854. Analysis of Groundwater Flow. (3) II. Principles of flow through porous media; applications of flow theory to well analysis and design; groundwater resource evaluation and regional groundwater systems analysis. Three hours rec. a week. Pr.: CE 552. CE-854-0-0908

CE 863. Advanced Topics in Sanitary Engineering. (1-3) On sufficient demand. For graduate students in sanitary engineering. The course provides a forum for the discussion of advanced topics in sanitary engineering. Research being conducted at this and other institutions is analyzed critically. CE-863-0-0908

CE 875. Traffic Engineering II. (3) II. Theory of traffic flow; design of traffic control devices and signal systems; application of statistical methods to traffic engineering problems. Two hours rec. and three hours lab a week. Pr.: CE 675. Pr. or conc.: STAT 510. CE-875-1-0908

CE 890. Graduate Seminar in Civil Engineering. (0) I, II. Discussion of current advances and research in Civil Engineering. One hour seminar biweekly. Pr.: none. CE-890-4-0908

CE 898. Master's Report. (Var.) I, II, S. Topics selected with approval of major professor and department head. CE-898-4-0908

CE 899. Master's Thesis. (Var.) I, II, S. Topics selected with approval of major professor and department head. CE-899-4-0908

CE 999. Dissertation Research. (Var.) I, II, S. Topics selected with approval of major professor and department head. CE-999-4-0908

Electrical Engineering

Donald R. Hummels,* head of department

Professors Gallagher,* Haft,* Hummels,* Kirmser,* Koepsel,* Lenhert,* Lucas,* and Rathbone;* Associate Professors Fowler and Johnson;* Assistant Professors Cottom,* B. Dyer, S. Dyer, Pahawa,* and Rys; Instructor Wakabayashi; Emeriti: Professors Hunt and Ward, Jr.*

Undergraduate study

Electrical engineers are involved in the design of electrically oriented systems for a wide range of applications in modern society. These systems or circuits range from miniature microprocessors through energy conversion systems to giant communication networks. The electrical engineer is involved in every phase of the transmission, conversion, and processing of energy and information for useful purposes both in industry and in our homes.

Opportunities exist for baccalaureate degree holders to continue education at advanced degree levels or to enter such fields as medicine, law, or business administration.

The first two years of the curriculum in electrical engineering at Kansas State University are primarily oriented toward mathematics and physical sciences. These two years prepare the student for the advanced work to be undertaken in the junior and senior years. In the third year, the student begins the study of fundamental concepts of electrical analysis and modeling. Together with experimental studies and techniques the modeling forms an important aspect of laboratory work. In the fourth and final year, the student's understanding is broadened by the introduction of various aspects of systems and electrical engineering design.

In the last three semesters, students may choose technical electives for a broad or specialized field of study. Specialized areas include: bioengineering, communication systems, control systems, digital systems, signal processing, electrical power systems, circuits and electronics, and advanced degree preparation.

Through the four years, the student is individually advised and counseled by the faculty. At various times during the year, engineers from industry are invited to the University to speak to the students on topics of current interest to the profession.

Graduate study

Major work is offered in programs of study leading to the master of science and doctor of philosophy degrees with areas of specialization in signal processing, communications, bioengineering, computer engineering, instrumentation, control systems, and electric energy systems.

Special facilities available for graduate research include a computer and signal processing laboratory, an instrumentation and control laboratory, a communications laboratory, a bioengineering laboratory, an energy systems laboratory, and an integrated circuits laboratory. Computing facilities include a wide range of mini and microcomputers within the department as well as an ITEL Advanced System 5-3 University computer.

Students who pursue the M.S. program in electrical engineering are generally B.S. graduates in electrical engineering from an accredited program. However, students with undergraduate degrees from other disciplines wishing to enter the M.S. program are encouraged to apply. The need to take additional undergraduate courses will be decided on an individual basis by the Graduate Affairs Committee of the Department of Electrical Engineering.

Curriculum in electrical engineering (EE)

Bachelor of Science in Electrical Engineering
133 hours required for graduation

Freshman

Fall semester	Course	Sem. hrs.
ENGL 100	English Composition I	3
CHM 210	Chemistry I	4
MATH 220	Analytic Geometry & Calculus I	4
SPCH 105	Oral Communication I	2
ME 212	Engineering Graphics I	2
		15
Spring semester		
ENGL 120	English Composition II*	
	or	
	Humanities or social science electives	3
CHM 230	Chemistry II	4
MATH 221	Analytic Geometry & Calculus II	4
CMPSC 211	Fortran	1
CMPSC 200	Fundamentals of Computer Programming	2
PE 101	Concepts in Physical Education	1
		15

Sophomore

Fall semester		
PHYS 213	Engineering Physics I	5
MATH 222	Analytic Geometry & Calculus III	4
ECON 110	Economics I	3
EE 241	Introduction to Computer Engineering	3
CHE 350	Engineering Materials	2
		17
Spring semester		
PHYS 214	Engineering Physics II	5
MATH 240	Elementary Differential Equations	4
CE 333	Statics	3
EE 510	Circuit Theory I	3
	Humanities or social science electives	3
		18

Junior

Fall semester		
EE 511	Circuit Theory II	4
EE 557	Electromagnetic Theory I	4
EE 525	Electronics I	3
EE 501	Electrical Engineering Lab I	2
	Humanities or social science electives	3
		16
Spring semester		
EE 526	Electronics II	3
EE 581	Energy Conversion I	3
EE 502	Electrical Engineering Lab II	2
ENGL 415	Written Communication for Engineers	3
ME 512	Dynamics	3
	Option electives	3
		17

Senior

Fall semester		
ME 513	Thermodynamics I	3
EE 530	Control Systems Design	3
	Option electives	3
	Complementary electives	6
	Humanities or social science electives	3
		18
Spring semester		
EE 590	Electrical Engineering Seminar	1
	Option electives	5
	Complementary electives	8
	Humanities or social science electives	3
		17

*English Composition II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from English Composition I.

Students with an adequate background in graphics may substitute two semester hours of course work selected from the approved list of complementary electives upon consultation with the student's faculty advisor.

Humanities and social science electives are to be selected from the catalog list and need not be taken in the order listed in the curriculum.

Fourteen semester hours of complementary electives, including a minimum of three semester hours from mathematics or statistics, must be selected from an approved list of complementary electives upon consultation with the student's faculty advisor. The complementary electives may include up to a maximum of six semester hours from electrical engineering courses.

Eleven semester hours of option electives must be selected from electrical engineering courses upon consultation with advisor.

Electrical engineering options

General

In the general option a set of specializations is possible. The student is expected to select a set of interrelated courses which will enable concentration in one area. Examples of such areas are communication systems, digital systems, circuits and electronics, control systems, signal processing, and electrical power systems.

Bioengineering

A student pursuing the option of bioengineering within the Department of Electrical Engineering can fulfill the requirements for a B.S. in electrical engineering by following the outlined core curriculum listed for electrical engineering. A listing of courses which support the life science component of the bioengineering option follows:

CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Lab	2
BIOCH 521	General Biochemistry	3
BIOL 198	Principles of Biology	4
BIOL 505	Comparative Anatomy of Vertebrates	4
BIOL 525	Systemic Physiology	4
AP 530	Anatomy and Physiology	4

The selected courses from the above list will be used as complementary electives in the electrical engineering curriculum. As a minimum, the student should select a physiology course and, if possible, additional electives in the chemistry area.

Computer engineering

A student pursuing the option of computer engineering within the Department of Electrical Engineering can fulfill the requirements for a B.S. in electrical engineering by following the outlined core curriculum listed for electrical engineering. The following courses are recommended as complementary and option electives:

CMPSC 300	Algorithmic Processes	3
CMPSC 305	Computer Organization & Programming IA	3
EE 631	Microcomputer Systems Design	3
EE 641	Design of Digital Systems I	3
EE 643	Computer Logic Lab	1
EE 649	Digital Computer Systems Design I	3

Courses in electrical engineering

Undergraduate credit

EE 241. Introduction to Computer Engineering. (3) I, II, S. Simple coding schemes, Boolean algebra fundamentals, elements of digital building blocks such as gates, flip-flops, shift-registers, memories, etc., basic engineering aspects of computer architecture and elements of machine language. Three hours rec. a week. Pr.: CMPSC 200. EE-241-0-0909

EE 499. Honors Research in Electrical Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering Honors Program. A report is presented orally and in writing during the last semester. EE-499-4-0909

Undergraduate and graduate credit in minor field

EE 501. Electrical Engineering Laboratory I. (2) I, II. Electrical engineering laboratory experiments on topics selected from and correlated with the concurrent or prerequisite courses. Three hours lab a week. Pr.: EE 241; Pr. or conc.: EE 511, EE 525. EE-501-1-0909

EE 502. Electrical Engineering Laboratory II. (2) I, II. Continuation of Electrical Engineering Laboratory I. Three hours lab a week. Pr.: EE 501; Pr. or conc.: EE 526. EE-502-1-0909

EE 510. Circuit Theory I. (3) I, II, S. An introduction to linear circuit theory; analysis of linear circuits containing resistance, inductance and capacitance. Three hours rec. a week. Pr. or conc.: MATH 240, PHYS 214. EE-510-0-0909

EE 511. Circuit Theory II. (4) I, II, S. Analysis of electric circuits using transform techniques. Four hours rec. a week. Pr.: MATH 240, EE 510. EE-511-0-0909

EE 519. Electric Circuits and Control. (4) I, II. Principles of direct-current circuits and machines, alternating-current circuits and machines, electronics, and application to instrumentation and control. Four hours rec. a week. Pr.: PHYS 214. EE-519-0-0909

EE 525. Electronics I. (3) I, II. Fundamentals of electronic components, devices, and circuits. Three hours rec. a week. Pr.: EE 510 or EE 519 or ET 530. EE-525-0-0909

EE 526. Electronics II. (3) I, II. Continuation of Electronics I. Three hours rec. a week. Pr.: EE 511, EE 525. EE-526-0-0909

EE 530. Control Systems Design. (3) I, II. Modeling, analysis, and design of control systems. Three hours rec. a week. Pr.: Senior standing. EE-530-0-0909

EE 557. Electromagnetic Theory I. (4) I, II. Vector analysis, electrostatics, magnetostatics, Faraday's Law, Maxwell's Equations, transmission lines, and applications. Four hours rec. a week. Pr.: PHYS 214, MATH 240. Pr. or conc.: EE 510. EE-557-0-0909

EE 581. Energy Conversion I. (3) I, II. Energy conversion principles and their application to electric energy converters operating in the static and the dynamic mode. Three hours rec. a week. Pr.: EE 510. Pr. or conc.: EE 557. EE-581-0-0909

EE 589. Circuits and Machines Lab. (2) I, II. Practical aspects of electrical circuits, transformers, and electrical motors and generators. One hour lec. and two hours lab a week. Pr.: EE 519. EE-589-1-0909

EE 590. Electrical Engineering Seminar. (1) I, II. Preparation and oral presentation of a written technical report. One hour rec. a week. Pr.: Senior standing in electrical engineering. EE-590-0-0909

Undergraduate and graduate credit

EE 603. Advanced Electrical Engineering Laboratory. (2) I, II. A project-oriented laboratory in which a small group of students works with a faculty member in a special area of interest. Projects usually involve design, measurement methods, or experimental work. May be repeated once. Pr.: EE 502. EE-603-1-0909

EE 624. Power Semiconductor Circuits. (3) I. Theory and application of semiconductor devices to the control and conversion of electric power; design of electronic power circuits such as inverters, controlled rectifiers and choppers using diodes, diacs, thyristors, triacs and power transistors. Three hours rec. a week. Pr.: EE 581. Conc.: EE 526. EE-624-0-0909

EE 625. Integrated Circuits Engineering. (3) I. An introduction to the major processes used in the design and fabrication of integrated circuits. Two hours rec. and three hours lab a week. Pr.: Consent of instructor. EE-625-1-0909

EE 627. Communication Electronics. (3) I. An introduction to analog communication systems. Includes amplitude modulation (AM) and frequency modulation (FM) by analog signals and the determination signal-to-noise ratio in AM and FM systems. Design of simple oscillators, modulators, mixers, and detectors. Three hours rec. a week. Pr.: EE 511. EE-627-0-0909

EE 628. Electronic Instrumentation. (3) II. Applications of electronics in the design of analog and digital systems for the measurement of physical variables and in the transduction of these variables into a useful form for both recording and control. Two hours rec. and three hours lab a week. Pr.: EE 526. EE-628-1-0909

EE 631. Microcomputer Systems Design. (3) I, II. Engineering application of microcomputers to instrumentation, control, and communications. Two hours rec. and three hours lab a week. Pr.: EE 241 and EE 525 or equiv. EE-631-1-0909

EE 632. Engineering Applications of Microcomputer Systems. (3) I, II. Elements of digital building blocks and number systems. Computer Systems organization, memories, microcomputer fundamentals. Applications of microcomputer systems. Not available for students with credit for EE 241. Two hours

rec. and three hours lab a week. Pr.: PHYS 214, High level programming language. EE-632-1-0909

EE 641. Design of Digital Systems I. (3) I, II. Design of combinatorial and sequential circuits, digital controllers, computer subsystems, and peripheral interfaces. Three hours rec. a week. Pr.: EE 241. EE-641-0-0909

EE 642. Design of Digital Systems II. (3) On sufficient demand. Hardware aspects pertaining to special purpose counters, computer input-output devices, A-D and D-A conversion, magnetic memory devices and systems, clocks, and interfacing. Three hours rec. a week. Pr.: EE 645 and EE 641. EE-642-0-0909

EE 643. Computer Logic Laboratory. (1) I. Laboratory experience in the design, construction, and debugging of simple digital systems and subsystems. Three hours lab a week. Pr. or conc.: EE 641. EE-643-1-0909

EE 644. Digital Systems Design Laboratory. (1) II. Practical aspects of digital systems design, including the design and operation of small minicomputer systems. Emphasis is on interfaces to, and control of, external devices and processes such as A/D converters, control panels, readers, printers, and graphic units. Three hours lab a week. Pr.: EE 649. EE-644-1-0909

EE 645. Digital Electronics. (3) II. The characteristics and performance of the major contemporary digital logic families. Three hours rec. a week. Pr.: EE 526. EE-645-0-0909

EE 647. Digital Filtering. (3) I. Difference equation characterization of digital filters, transient and steady-state analysis of digital filters using the Z-transform, spectral analysis of digital signals, design and implementation of digital filters. Three hours rec. a week. Pr.: EE 511. EE-647-0-0909

EE 649. Digital Computer Systems Design I. (3) I. Conventional computer hardware organization. Hardware implementation of instructional sets and addressing modes. I/O devices, interfaces, and control. Three hours rec. a week. Pr.: EE 241, EE 519 or equiv.; or CS 305. EE-649-0-0909

EE 661. Digital Communication Systems. (3) II. An introduction to digital communication systems including modulation, transmission, demodulation, and random noise. Principles of optimum digital receiver design and evaluation of receiver performance are included. Three hours rec. a week. Pr.: EE 511. EE-661-0-0909

EE 662. Design of Communication Circuits. (3) II. The design and performance testing of common communication circuits. Topics include tuned amplifiers, impedance matching, oscillators, filters, transmission lines, and phase locked loops. Two hours rec. and three hours lab a week. Pr.: EE 526, EE 502. EE-662-1-0909

EE 681. Wind Engineering. (3) II. Wind characteristics, turbine performance, synchronous and asynchronous electrical loads, siting, economics, open-air testing, rectifiers, and inverters. Three hours rec. a week. Pr.: ME 512; and EE 525 or EE 519. EE-681-0-0909

EE 682. Energy Conversion II. (3) On sufficient demand. Continuation of EE 581. Three hours rec. a week. Pr.: EE 581. EE-682-0-0909

EE 685. Electric-Energy Systems Engineering I. (3) I. A comprehensive study of the network aspects of existing electric-energy systems in the steady state. Vector-matrix descriptions and computer solutions are emphasized. Three hours rec. a week. Pr. or conc.: EE 581. EE-685-0-0909

EE 686. Electric-Energy Systems Engineering II. (3) II. A comprehensive study of the systems control and operational aspects and the transient behavior of existing electric-energy systems. Vector-matrix description and computer solutions are emphasized. Three hours rec. a week. Pr.: EE 685. Pr. or conc.: EE 530. EE-686-0-0909

EE 690. Problems in Electrical Engineering. (Var.) I, II, S. EE-690-3-0909

EE 695. Solid-State Engineering. (3) I. Elastic, thermal, electric, and magnetic properties of crystals and metals, conduction in metals and semiconductors; solid state devices. Three hours rec. a week. Pr.: EE 557; PHYS 551 or NE 410 or NE 325. EE-695-0-0909

EE 730. Control Systems Analysis and Design. (3) II. Utilization of classical analysis techniques for control system compensation. State space control theory fundamentals are presented in addition to an introductory treatment of several major systems areas. Three hours rec. a week. Pr.: EE 530 or ME 712. (Cross-listed with ME 730.) EE-730-0-0909

EE 736. Discrete-Time and Computer-Control Systems. (3) I. Analysis and design of discrete-time, sampled-data, and computer-control systems using discrete-state equations and Z-transforms. Three hours rec. a week. Pr.: EE 526, 530 and 581. EE-736-0-0909

EE 741. Digital Computer Systems Design II. (3) II. Study of alternate computer hardware structures. Engineering trade-offs in implementation of alternate instruction sets and computing structures. Design of memory hierarchies, including cache, and associative-memory techniques. Hardware implementation of program structures. Three hours rec. a week. Pr. or conc.: EE 644. EE-741-0-0909

EE 747. Digital Signal Processing Laboratory. (2) II. Analog signal digitization; demonstration of aliasing problems; spectral analysis of digital signals using Fourier and other signal representation techniques; digital filtering problems—lowpass, bandpass, notch, etc.; application examples related to biomedical and speech data. Six hours lab a week. Pr.: CMPSC 211 and EE 647. EE-747-1-0909

EE 758. Electromagnetic Theory II. (3) I, II. Continuation of EE 557. Three hours rec. a week. Pr.: EE 557. EE-758-0-0909

EE 771. Control Theory Applied to Bioengineering. (3) II. Development of mathematical models used in the study and analysis of physiological control systems providing techniques for varying pertinent biological parameters. Three hours rec. a week. Pr. or conc.: EE 530 or ME 712. Also a basic physiology course. EE-771-0-0909

EE 772. Theory and Techniques of Bioinstrumentation. (3) I. Theoretical aspects of biological signals, electrodes, transducers, and processing equipment with emphasis on the acquisition and recording of the responses to electrical potentials, pressure, and flow measurements. Three hours rec. a week. Pr.: EE 771 or consent of instructor. EE-772-0-0909

EE 773. Bioinstrumentation Laboratory. (1) I. Practical experience with and evaluations of laboratory and clinical techniques related to electrodes, transducers, and monitoring equipment. Emphasis is on instrumentation for the respiratory, cardiovascular, and nervous systems. Three hours lab a week. Pr.: Conc. enrollment in EE 772 and AP 773. EE-773-1-0909

EE 791. Matrix Methods Applied to Electrical Engineering. (3) On sufficient demand. Applications of matrices and linear vector spaces to electrical systems. Three hours rec. a week. Pr.: EE 892. EE-791-0-0909

Graduate credit

EE 828. Advanced Topics in Instrumentation. (3) On sufficient demand. Selected topics related to transducer design and characterization, noise reduction in measurement systems, special purpose data acquisition systems. Three hours rec. a week. Pr.: EE 628. EE-828-0-0909

EE 830. Advanced Feedback Control Systems. (3) II. Analysis and design of feedback control systems with an emphasis on modern control theory. Both linear and nonlinear systems are considered. Three hours rec. a week. Pr.: EE 730 or EE 892. EE-830-0-0909

EE 841. Advanced Topics in Computer Engineering. (3) On sufficient demand. Selected topics related to modern developments in computer system design. Special hardware features in computer system design. Special hardware features and structures appearing in larger computer systems or networks. Methods for describing computing hardware. Three hours rec. a week. Pr.: EE 741. EE-841-0-0909

EE 855. Advanced Topics in Electromagnetic Theory. (3) On sufficient demand. Mathematical development of electromagnetic wave theory. Three hours rec. a week. Pr.: EE 758. EE-855-0-0909

EE 861. Noise Theory. (3) I. Study of noise phenomena and measurement; the representation of noise by statistical parameters, the noise factor of undesired noise sources, and the measurement applications of noise generators. Three hours rec. a week. Pr.: EE 511. EE-861-0-0909

EE 863. Signal Detection Theory. (3) I. A study of optimum signal detection principles for analog and digital communication over the linear additive noise channel. Includes series representations for random signals and the derivation of minimum mean square error (MMSE) receivers for AM and FM and maximum likelihood (ML) receivers for FSK, MSK, and M-Ary PSK. Three hours rec. a week. Pr.: EE 761. EE-863-0-0909

EE 865. Information Theory. (3) II. Information as a measure of uncertainty, zero-memory and Markov sources, coding of information sources, channels and mutual information, reliable transmission via unreliable channels, error correcting codes. Three hours rec. a week. Pr.: EE 661. EE-865-0-0909

EE 866. Transform Processing of Digital Signals. (3) II. Orthogonal Transforms in digital signal processing with emphasis on one- and two-dimensional signals, generalized Wiener filtering, feature selection in pattern recognition, and elements of adaptive filtering techniques. Three hours rec. a week. Pr.: EE 761. EE-866-0-0909

EE 868. Advanced Digital Filtering. (3) II. Advanced treatment of the theory, design, and implementation of digital filters; use of digital filters to process random signals. Three hours rec. a week. Pr.: EE 647 and EE 761. EE-868-0-0909

EE 881. Advanced Topics in Electric Energy Systems. (3) On sufficient demand. Subjects of current interest such as computer methods, distribution and transmission systems, systems planning and economics, extra high voltage transmission, exotic power sources. May be repeated. Three hours rec. a week. Pr.: EE 686. EE-881-0-0909

EE 890. Advanced Electrical Theory. (Var.) I, II. For advanced study in specialized areas by M.S. students. Pr.: M.S. student. EE-890-3-0909

EE 892. Deterministic Signal Analysis. (3) I. Time and frequency domain analysis of deterministic signals found in communication and control systems. Fourier Series, Fourier Transform, Laplace Transform, and Z-Transforms are used. Continuous and discrete time convolution are included. Three hours rec. a week. Pr.: EE 511. EE-892-0-0909

EE 897. Research in Electrical Engineering. (Var.) I, II, S. Special research problems in electrical engineering. Pr.: Consent of instructor. EE-897-4-0909

EE 898. Master's Report. (Var.) I, II, S. Topics selected with approval of major professor and department head. EE-898-4-0909

EE 899. Master's Thesis. (Var.) I, II, S. Topics selected with approval of major professor and department head. EE-899-4-0909

EE 931. Advanced Topics in Control Theory. (3) On sufficient demand. Study of advanced topics in optimal, time-varying, and stochastic control theory, or other recent developments in the control systems area. May be repeated. Three hours rec. a week. Pr.: EE 830. EE-931-0-0909

EE 962. Advanced Topics in Communications. (3) On sufficient demand. Selected topics related to the design and performance analysis of communication systems. Topics may include advanced modulation techniques, optimum receiver design, nonlinear channels, multipath analysis, diversity systems, and others. Three hours rec. a week. Pr.: EE 761. EE-962-0-0909

EE 967. Advanced Topics in Digital Signal Processing. (3) On sufficient demand. Selected topics related to adaptive digital filtering techniques; special purpose hardware for digital filtering; two-dimensional signal processing and classification. Three hours rec. a week. Pr.: EE 866 or EE 868. EE-967-0-0909

EE 971. Advanced Topics in Bioengineering. (3) On sufficient demand. Study of complex physiological system simulation and analysis techniques, modern experimental and clinical electronic bioinstrumentation systems. Topics selected according to graduate student's interests. May be repeated. Three hours rec. a week. Pr.: EE 771 or EE 772. EE-971-0-0909

EE 999. Dissertation Research. (Var.) I, II, S. Topics selected with approval of major professor and department head. EE-999-4-0909

Engineering Technology

John C. Lindholm,* head of department

Professors Chung,* Erickson,* and Lindholm;* Associate Professors Dawes, Koelliker,* Vaughn, and Wilson; Assistant Professors Gilliland, Hightower, and A. Matthews.

Area coordinators

Computer Engineering Technology ..... W. Dawes
Electronic Engineering Technology ..... A. Vaughan
Environmental Engineering Technology (Radiation Protection) ..... R. Hightower
Environmental Engineering Technology (Water Quality) ..... A. Matthews
Foo Engineering Technology ..... L.E. Erickson
Mechanical Engineering Technology ..... J. Lindholm
Production Management Technology ..... C. Wilson

Engineering technology (ET)

Bachelor of Science in Engineering Technology
124 semester hours required for graduation

Engineering technology is a rapidly growing program which offers excellent career opportunities to young men and women. As members of the engineering team graduates work with engineers, scientists, and craftsmen in coordinated efforts relating to the design, development, and manufacture of products and systems which are needed by society.

While the primary responsibility of the engineer is the creation of new designs, the technologist is involved more in routine design and development; liaison and supervision of craftsmen and technicians; technical sales and service.

The emphasis of the technology program is less theoretical than that for the engineering student. There are more lab courses with an emphasis on hardware and applications.

Core courses (63 hours)

Communications 11

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
ENGL 415	Written Communication for Engineers	3
SPCH 105	Oral Communication I	2

Physical science 12-13

CHM 110	General Chemistry	5
	or	
CHM 210	Chemistry I	4
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4

Mathematics and statistics 15

MATH 100	College Algebra	3
MATH 150	Plane Trigonometry	3
MATH 210	Technical Calculus I	3
MATH 211	Technical Calculus II	3
STAT 320	Elements of Statistics	3

(PMT students substitute STAT 350 for STAT 320)

Engineering technology 8

ME 212	Engineering Graphics I	2
IE 372	Computers & Data Processing	2
ET 530	Electrical Circuit Technology I	4
PE 101	Concepts in Physical Education	1
ECON 110	Economics I	3

Humanities or social science electives 12
Free electives 0-1

Computer engineering technology

This program is designed to develop capabilities in digital computer technology. Emphasis is placed on analog and digital circuits and their relationship to the field of computing. Through work in computer science, the student has an opportunity to develop a complementary working knowledge in computer architecture, structure, and software.

Area of specialization (61 hours)

Required courses 42

CMPSC 300	Algorithmic Processes	3
CMPSC 305	Computer Organization & Programming I	3
EE 241	Introduction to Computer Engineering	3
EE 631	Microcomputer Systems Design	3
ET 435	Digital Logic Lab	1
ET 536	Digital Logic Systems	4
ET 430	Electronic Fabrication Lab	2
ET 410	Properties of Engineering Materials	2
ET 533	Electronic Devices & Systems	4
ET 531	Electrical Circuit Technology II	4
ET 534	Automatic Control Technology	3
ET 537	Electronic Measurements	4
ET 538	Digital Instrumentation & Control	3
ME 560	Engineering Economics	3

Area electives 14-9
Management electives 3-8
Free electives 2

Electronic engineering technology

This program is designed to provide the essential background for a career in one of the many areas of the electrical/electronics industry, including liaison and supervision of craftsmen and technicians, routine design and development, production, maintenance, and technical sales.

Area of specialization (61 hours)

Required courses 40

IE 241	Production Processes	3
ET 410	Properties of Engineering Materials	2
ET 430	Electronic Fabrication Lab	2
EE 241	Introduction to Computer Engineering	3
ET 435	Digital Logic Lab	1
ET 536	Digital Logic Systems	4
ET 533	Electronic Devices & Systems	4
ET 537	Electronic Measurements	4
ET 531	Electrical Circuit Technology II	4
ET 534	Automatic Control Technology	3
ET 538	Digital Instrumentation & Control	3
ET 539	Electronic Communications	4
ME 560	Engineering Economics	3

Area electives 16-10
Management electives 3-9
Free electives 2

Environmental engineering technology

Concern about environmental quality has resulted in a significant increase in the number of trained personnel needed to implement pollution prevention and control activities. Much of this activity relates to concern over providing safe supplies of water and safely disposing of domestic and industrial wastes, in addition to protecting and restoring the quality of the total environment.

Area of specialization (61 hours)

Required courses		58
BIOL 198	Principles of Biology	4
BIOL 529	Fundamentals of Ecology	3
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Lab	2
GEOL 120	Environmental Geology	2
CE 212	Elementary Surveying Engineering	3
CE 231	Statics A	3
CE 322	Soil & Foundation Construction	3
CE 331	Strength of Materials A	3
ME 560	Engineering Economics	3
ET 512	Mechanics of Fluids	3
ET 514	Energy Conversion Technology	3
ET 522	Air Pollution Control Techology	2
	and	
	Water Quality Group courses	
BIOL 555	Microbiology	5
CE 563	Sanitary Engineering Fundamentals	3
CE 565	Sanitary Engineering Design	3
ET 521	Water Treatment Technology	3
CE 551	Hydrology	2
CE 553	Hydrologic Methods Lab	1
	or	
	Radiation Protection Group courses	
CHM 240	Environmental Chemistry Lab	1
NE 410	Introduction to Nuclear Engineering	3
NE 512	Principles of Radiation Detection	3
NE 550	Radiation Protection Engineering	3
BIOL 605	Radiation Safety in the Lab	1
ET 498	Problems in Engineering Technology	3
Area electives		3

Food engineering technology

This program provides the student with an engineering technology education directed toward a career in the food industry. The food industry is large and of considerable economic and social significance in Kansas, the United States, and the world. Areas of interest include production management, technical service, product and process development, process design, project engineering, and quality control.

Area of specialization (61 hours)

Required courses		55
CHM 230	Chemistry II	4
One course (rec/lab) in organic chemistry		5
One course in biochemistry		3
BIOL 198	Principles of Biology	4
BIOL 555	Microbiology	5
BIOL 520	Microbiology of Foods	4
ET 410	Properties of Engineering Materials	2
ET 411	Properties of Engineering Materials Lab	1
ET 512	Mechanics of Fluids	3
ET 514	Energy Conversion Technology	3
ET 440	Introduction to Food Engineering Technology	4
ET 640	Food Processing Operations	5
ASI 311	Introductory Food Chemistry	3
ASI 410	Food Analysis	3
FN 502	Principles of Nutrition	3
ME 560	Engineering Economics	3
Area electives		6

Mechanical engineering technology

Continued industrial growth has resulted in an increasing need for technically trained personnel. The mechanical engineering technologist, a vital member of the engineering team, applies practical approaches to problems in many technical areas.

Area of specialization (61 hours)

Required courses		46
ME 217	Engineering Graphics II	3
IE 241	Production Processes	3
CE 231	Statics A	3
CE 331	Strength of Materials A	3
CE 332	Strength of Materials A Lab	1
ET 410	Properties of Engineering Materials	2
ET 411	Properties of Engineering Materials Lab	1
ET 512	Mechanics of Fluids	3
ET 514	Energy Conversion Technology	3
ET 532	Instrumentation & Measurement Technology	3
ET 534	Automatic Control Technology	3
ET 540	Industrial Microprocessing	3
ET 560	Kinematics & Mechanisms	3
ET 561	Machine Design	3
ET 562	Mechanical Design Lab I	2
ET 563	Mechanical Design Lab II	2
ET 569	Mechanical Equipment Lab	2
ME 560	Engineering Economics	3
Area electives		7
Management electives		6
Free electives		2

Production management technology

For young men and women interested in a career in manufacturing, the production management program provides excellent preparation. The curriculum emphasizes management, work measurement, production economics, plant layout, and quality control, all of which are important for the industrial fabrication of consumer products.

Area of specialization (61 hours)

Required courses		50
ME 217	Engineering Graphics II	3
STAT 351	Business & Economic Statistics II	3
CE 231	Statics A	3
ET 410	Properties of Engineering Materials	2
ET 411	Properties of Engineering Materials Lab	1
IE 241	Production Processes	3
IE 341	Manufacturing Processes	2
IE 443	Quality Assurance	2
IE 481	Motion & Time Study	2
IE 484	Factory Layout	2
IE 501	Industrial Management	3
IE 502	Industrial Management II	3
IE 609	Occupational Safety & Health	3
ET 540	Industrial Microprocessing	3

ME 560	Engineering Economics	3
ACCTG 211	Financial Accounting	3
ACCTG 221	Managerial Accounting	3
MANGT 421	Production Management	3
MANGT 631	Collective Bargaining	3
Area electives		9
Free elective		2

Note—Production management technology students must take Economics II as a social science elective.

Courses in engineering technology

Undergraduate credit

ET 410. Properties of Engineering Materials. (2) I, II. Engineering requirements of materials: mechanical, thermal, electrical, and biological properties and behavior of materials. Two hours rec. a week. Pr.: CHM 110 or CHM 210, PHYS 113. ET-410-1-0925

ET 411. Properties ff Engineering Materials Lab. (1) I, II. Laboratory experiments supplementing ET 410. Pr. or conc.: ET 410. ET-411-1-0925

ET 430. Electronic Fabrication Laboratory. (2) I, II. Laboratory experience in the layout, fabrication, and assembly of electronic circuits. Project oriented with an emphasis on printed circuit boards. Six hours lab a week. Pr. or conc.: PHYS 114. ET-430-0-0925

ET 435. Digital Logic Laboratory. (1) I, II. Experiments using digital logic IC's to implement combinational logic functions, sequential logic functions, serial and parallel adders, shift registers, ripple and sequential counters, and other digital system modules. Three hours lab a week. Pr. or conc.: EE 241. ET-435-1-0925

ET 440. Introduction to Food Engineering Technology. (4) I. Material and energy balances with application to food processing. Fluid flow and heat transfer in food processing. Thermodynamic properties and laws. Three hours rec. and three hours lab a week. Pr.: PHYS 113 or 115, BIOCH 120 or CHM 190, MATH 210 or 500. ET-440-1-0925

ET 480. Materials of Nuclear Reactor Systems. (2) On sufficient demand. The properties and behavior of fuel and non-fuel materials used in nuclear reactor systems are considered. Selected nuclear fuel cycle topics are covered. Pr.: ET 410. ET-480-0-0925

ET 481. Nuclear Reactor Technology I. (3) On sufficient demand. Introduction to nuclear and neutron physics, including: interaction of neutrons, gamma rays and beta and alpha particles with matter; production of neutrons and the neutron life cycle; basic neutron diffusion principles; and the nuclear fuel cycle. Pr.: PHYS 114, STAT 320. ET-481-0-0925

ET 482. Nuclear Reactor Technology Analysis. (3) I. Applied numerical analysis emphasizing solutions of elementary differential equations with a very strong emphasis on applications in nuclear reactor technology. Three hours rec. a week. Pr.: MATH 211 or equiv. ET-482-0-0925

ET 498. Problems in Engineering Technology. Credit arranged. I, II, S. Pr.: Approval of instructor. ET-498-3-0925.

ET 499. Honors Research in Engineering Technology. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering Honors Program. A report is presented orally and in writing during the last semester. ET-499-4-0925

Undergraduate and graduate credit in minor field

Courses in Engineering Technology may not be taken for graduate credit by students in the College of Engineering.

ET 512. Mechanics of Fluids. (3) I. Fluid properties, fluid statics. Fluid dynamics of high and low viscosity fluids including pipe flow, open-channel flow, flow about immersed objects, fluid machinery, and flow measurements. Three hours rec. a week. Pr.: PHYS 113. ET-512-1-0925

ET 514. Energy Conversion Technology. (3) II. Introduction to energy conversion technology, energy, and power; thermodynamics, power cycles, and refrigeration. Three hours rec. a week. Pr.: CHM 110 or CHM 210, PHYS 113. ET-514-0-0925

ET 521. Water Treatment Technology. (3) I. Application of water treatment technology to design, operation, and monitoring in the water treatment industry. Emphasis is placed on process understanding through field trips and laboratory experience. Two hours rec. and three hours lab a week. Pr.: CE 563. ET-521-1-0925

ET 522. Air Pollution Control Technology. (2) I, II. An introduction to air pollution control, including federal regulations, meteorology, and damages from air pollution. Control techniques for particulate and gaseous pollutants and automobile exhausts are covered. Two one-hour lec. a week. Pr.: Consent of instructor. ET-522-0-0925

ET 530. Electrical Circuit Technology I. (4) I, II. D-C and A-C steady-state circuit analysis. Study of resistance, capacitance, and inductance. Basic magnetic circuits. Polyphase steady-state circuits. Brief study of A-C machinery with emphasis on selection of applications. Three hours lec. and three hours lab a week. Pr.: PHYS 114, MATH 210 or 220. ET-530-1-0925

ET 531. Electrical Circuit Technology II. (4) I. Circuit analysis of power supplies, OP amp units, filters and oscillators including S plane introduction, Fourier analysis, and transient response. Three hours rec. and three hours lab a week. Pr.: ET 533 and ET 537. ET-531-3-0925

ET 532. Instrumentation and Measurement Technology. (3) I, II. Principles and application of instrumentation and measurement equipment. One hour rec. and six hours lab a week. Pr.: ET 530. ET-532-1-0925

ET 533. Electronic Devices and Systems. (4) I, II. Essential amplifier characteristics, elements, and analysis, including small signal and large signal units, device limitations, circuit configurations, and frequency response. Three hours rec. and three hours lab a week. Pr.: ET 530. ET-533-1-0925

ET 534. Automatic Control Technology. (3) II. Application oriented control systems technology including basic systems dynamics, regulatory, servo, computer control, and system specifications. Two hours rec. and three hours lab a week. Pr.: ET 530. ET-534-1-0925

ET 536. Digital Logic Systems. (4) II. Practical aspects of digital system design involving integrated and discrete circuit switching behavior, system interfacing, I/O devices, and A-D and D-A conversion, memory devices, and system debugging.

Three hours lec. and one three-hour lab a week. Pr.: ET 435. ET-536-1-0925

ET 537. Electronic Measurements. (4) II. Operation and application of basic electronic measuring instruments including meters, oscilloscopes, potentiometers, bridges, spectrum analyzers, etc. Three hours rec. and three hours lab a week. Pr.: ET 530. ET-537-1-0925

ET 538. Digital Instrumentation and Control. (3) II. Hardware fundamentals of digital based instrumentation and control systems with emphasis on interfacing. Two hours rec. and three hours lab a week. Pr.: ET 531, ET 536. Pr. or conc.: ET 537, ET 534. ET-538-1-0925

ET 539. Electronic Communications. (4) I. Fundamental communication theory and circuitry including AM, FM, DSBSC, SSBSC, TDM, and pulse techniques. Generation, recovery, bandwidth, and applications are discussed. Three hours rec. and three hours lab a week. Pr. or conc.: ET 531. ET-539-1-0925

ET 540. Industrial Microprocessing. (3) II. Introduction to Boolean algebra and digital logic circuits. Elements of microcomputers; memory elements, central processing unit, tri-stating, memory maps, buses. Machine and assembly language programming. Principles of machine control and A/D and D/A interfacing. Two hours rec. and three hours lab a week. Pr.: ET 530 or equiv. For Engineering Technology majors and non-engineering majors only. ET-540-1-0925

ET 560. Kinematics and Mechanisms. (3) II. Plane motion analysis and elementary synthesis of fourbar linkages and cams, gears and gear trains. Two hours rec. and three hours lab a week. Pr.: CE 231. ET-560-1-0925

ET 561. Machine Design. (3) I. Applications of statics, strength of materials and kinematics to the design of machine components. Materials selection and fatigue loading are considered. Three hours rec. a week. Pr.: ET 560 and CE 331. ET-561-0-0925

ET 562. Mechanical Design Lab I. (2) I, II. Application of the principles of the design process in solving design projects. Projects will be obtained from industry or developed by instructor. Six hours lab a week. Pr. or conc.: ET 561. ET-562-1-0925

ET 563. Mechanical Design Lab II. (2) I, II. Continuation of Mech. Des. Lab I project with completion of detail design and drawings. Possibly building and testing components designed. Six hours lab a week. Pr.: ET 562. ET-563-1-0925

ET 569. Mechanical Equipment Laboratory. (2) II. Experiments utilizing a variety of mechanical devices and systems to demonstrate fundamental concepts in mechanics, fluid mechanics, thermodynamics and heat transfer. Six hours lab a week. Pr.: ET 512, ET 514, ET 532. ET-569-1-0925

ET 583. Nuclear Reactor Technology II. (3) On sufficient demand. Theory of diffusion and slowing down of neutrons with application to subcritical and critical reactors; introduction to the time behavior of reactor systems. Pr.: ET 481. ET-583-0-0925

ET 584. Radiation Detection and Monitoring. (3) On sufficient demand. Principles of operation of detectors used in the measurement and monitoring of ionizing radiation. Pr.: ET 480. ET-584-0-0925

ET 585. Nuclear Reactor Thermal Technology. (3) On sufficient demand. Introduction to conduction, convection and radiation heat transfer as applied to reactor cores and systems. Consideration of nuclear reactor safety and power reactor systems. Pr.: ET 481. ET-585-0-0925

ET 586. Radiation Protection Technology. (2) On sufficient demand. A study of radiation protection environmental effects of radiation and an introduction to nuclear reactor shielding. Pr.: ET 584. ET-586-0-0925

ET 640. Food Processing Operations. (5) II. A study of food processing unit operations and their applications with emphasis on heat and mass transfer operations such as drying, sterilization, freezing and thawing, extraction, and adsorption. Four hours rec. and three hours lab a week. Pr.: ET 440. ET-640-1-0925

General Engineering

Donald E. Rathbone, dean

Undergraduate credit

DEN 160. Engineering Concepts. (2) I, II. An introduction to engineering and engineering design. Problems involving the basic concepts of engineering science are considered. Two class periods a week. DEN-160-1-0901

DEN 200. Kansas State Engineer Journalism. (1-2) I, II. Editorial and business staff work on the Kansas State Engineer. Pr.: Junior classification and consent of dean. DEN-200-2-0901

DEN 250. Impact of Engineering Technology on Society. (3) I, II. A study of social, economic, and environmental problems as a function of technology. Study of various significant technology. Study of various significant technological developments on present society and parallels with present developments. Study of current problems, detection of causes, and analysis of solutions. Implications for the future; governmental, industrial, and individual responsibility in detection of potential problems and methods of control or solution. Three hours rec. a week. DEN-250-0-0901

DEN 299. Honors Seminar in Engineering. (1) I, II. Selected topics of general interest. Open to sophomores in the Engineering Honors Program for two semesters. DEN-299-0-0901

DEN 380. Principles of Solar Energy Conversion and Utilization. (3) I. Solar radiation; solar collectors; engineering principles of solar house space heating, cooling, and water heating; conversion of solar energy into mechanical power and electricity; solar engines; application of solar energy in industrial processes; calculations of efficiency of solar energy conversion processes; cost analysis of various solar applications. Three hours rec. a week. Pr.: PHYS 113. DEN-380-0-0910

DEN 399. Honors Colloquium in Engineering. (1) I, II. Selected topics of general interest. Open to juniors in the Engineering Honors Program for two semesters. DEN-399-0-0901

DEN 420. Introduction to Alternative Energy Sources. (3) II. Introduction to solar, geothermal, wind, tidal, thermal sea gradients, breeder reactor, and fusion energy sources. Concepts, devices, potential, economics, and status of each energy source. Introduction to the all-electric economy. Three hours rec. a week. Open to all non-engineering and first- and second-year engineering students. DEN-420-0-0901

DEN 425. Introduction to Energy and Environmental Technology. (2) I, II. An introductory course for non-engineering students. An introduction to the technology employed in analyzing energy and pollution control processes. The course emphasizes energy problems, control of water and air pollution, food, and land use problems, and material recycling concepts. Not open to engineering students. Two hours lec. a week. DEN-425-0-0901

DEN 450. Engineering Law. (3) I, II. An introduction to concepts of law pertinent to engineering practice. These include contracts, torts, products liability, business associations, engineering licensing, real and personal property law, commercial law, and taxes. Three hours rec. a week. Pr.: Junior standing. DEN-450-0-0901

DEN 499. Honors Research in Engineering. (1) I, II. Individual research problem selected with approval of faculty advisor. Open to seniors in the Engineering Honors Program for two semesters. Written report is presented at end of second semester. DEN-499-4-0901

DEN 740. Applied Linear Analysis. (3) I. The application of linear analysis to engineering problems, including derivations of equations, exact and approximate solutions of systems representable by matrix algebraic, differential, and integral equations. Concepts of characteristic, impedance, transfer and influence functions. Three hours rec. a week. Pr.: MATH 240. DEN-740-0-0901

Industrial Engineering

Frank A. Tillman,* head of department

Professors Bennett,* D. Grosh,* Hwang,* Konz,* Lee,* Smaltz,* and Tillman;* Associate Professors L. Grosh,* Willems, and Wilson; Assistant Professor Muthuraj Vaithianathan; Emeriti: Professors Byers and Hansen.

Undergraduate study

The curriculum in industrial engineering emphasizes the design, improvement, and installation of integrated systems of men, materials, and equipment. Studies in mathematical, physical, and social sciences are united with a modern approach to principles of engineering analysis and design to specify, predict and evaluate the results of any industrial system. In addition, strong consideration is given to the economic and human factors involved in industrial operations. With the advent of the inexpensive microprocessor, computer-aided manufacturing has become a major thrust in manufacturing. This area has provided a new frontier for industrial engineering and we currently have a manufacturing option in the industrial engineering curriculum.

The use of newly developed techniques and fresh interpretations of more traditional approaches to industry's problems helps to keep the course and curriculum offerings current.

Graduate study

Major work is offered leading to the degrees master of science and doctor of philosophy with special emphasis on modern quantitative solution of industrial problems. Course work and research may be conducted in human factors, operations research, manufacturing engineering, and engineering management.

Ergonomics—Ergonomics (human factors) is the study of work. The basic sciences of physics, psychology, and physiology are applied in job design to make the machine fit the man—rather than fit the man to the machine. Sub-topics include inspection, heat stress, cold stress, illumination, noise, toxicology, biomechanics, and workstation design.

Operations research—The study of operations research deals with building decision models which may be mathematical, computer simulation, or statistical with which a business concern or organization optimizes their decision making within a set of constraints.

Manufacturing engineering—Manufacturing engineering treats the efficient use of machine tools and processes in the manufacture of discrete parts. Emphasis is on modern techniques such as CAD/CAM and computer control of machine tools as well as the use of the computer to collect and analyze data for control of the shop floor. The interface between the machine tool, a handling device such as a robot, and the part are essential parts of this program.

Engineering management—The program blends the basic engineering background with accounting, marketing, finance, operations research, and the behavioral sciences. This degree is of particular interest to engineers who do not have a B.S. in industrial engineering and want to broaden their backgrounds in management.

Several strong minors are available in the College of Engineering and College of Arts and Sciences.

Prerequisite to graduate work in these fields is the completion of an undergraduate curriculum in engineering or science which satisfies the major areas required in the undergraduate industrial engineering curriculum at Kansas State University.

Undergraduate students from other scientific disciplines such as mathematics, chemistry, physics, and computer science are encouraged to consider the possibility of a graduate degree in industrial engineering.

Facilities and equipment for advanced study and research are extensive and majors in the department have access to the University Computing Center.

A University remote-computing laboratory is located in Seaton Hall. This adjunct facility contains a card reader and printer in addition to VDT's and typewriter units connected directly to the University's ITEL AS/5 computing system.

Curriculum in industrial engineering (IE)

Bachelor of Science in Industrial Engineering
130 hours required for graduation

Freshman

Fall semester	**Course**	**Sem. hrs.**
ENGL 100	English Composition I	3
MATH 220	Analytic Geometry & Calculus I	4
CHM 210	Chemistry I	4
ECON 110	Economics I	3
PE 101	Concepts in Physical Education	1
IE 015	Engineering Assembly	0
		15
Spring semester		
ENGL 120	English Composition II*	
	or	
	Humanities or social science electives	3
MATH 221	Analytic Geometry & Calculus II	4
CHM 230	Chemistry II	4

IE 120	Introduction to Industrial Engineering	2
	Humanities or social science electives	3
IE 015	Engineering Assembly	0
		16

Sophomore

Fall semester

PHYS 213	Engineering Physics I	5
MATH 222	Analytic Geometry & Calculus III	4
ACCTG 211	Financial Accounting	3
IE 241	Production Processes	3
	Humanities or social science electives	3
IE 015	Engineering Assembly	0
		18

Spring semester

PHYS 214	Engineering Physics II	5
MATH 240	Elementary Differential Equations	4
	Humanities or social science electives	3
ME 212	Engineering Graphics I	2
IE 372	Computers & Data Processing	2
IE 015	Engineering Assembly	0
		16

Junior

Fall semester

STAT 510	Introductory Probability & Statistics I	3
IE 551	Work Design	3
	Engineering sciences	11
IE 015	Engineering Assembly	0
		17

Spring semester

IE 501	Industrial Management	3
IE 541	Statistical Quality Control	3
	Technical electives	9
1E 050	Industrial Plant Studies	0
1E 015	Engineering Assembly	0
		15

Senior

Fall semester

IE 553	Production Plannning & Inventory Control	3
1E 530	Industrial Project Evaluation	3
1E 571	Introduction to Operations Research I	3
ENGL 415	Written Communication for Engineers	3
	Humanities or social science electives	3
	Technical electives	3
IE 015	Engineering Assembly	0
		18

Spring semester

IE 554	Industrial Facilities Layout & Design	3
	Technical electives	9
	Engineering sciences	3
IE 015	Engineering Assembly	0
		15

*Optional if requirements for Written Communication for Engineers (ENGL 415) are met from English Composition I.

Humanities and social science electives must be selected from the approved list and need not be taken in the order listed in the curriculum.

Technical electives must be selected from the approved departmental list.

A total of 14 hours of engineering sciences are required. These must include one course in each area: materials, mechanics, circuits, and thermodynamics.

Manufacturing engineering option

The Department of Industrial Engineering has an option in manufacturing engineering which should be of particular interest to those students preparing for a career in a manufacturing environment.

Inherent in this program is the basic background of industrial engineering with an emphasis in manufacturing particularly in computer based manufacturing. The graduates from this program will have a strong background in the use of computers in all phases of manufacturing as well as the impact of other recent developments such as robots and lasers. The first two years are the same as the basic industrial engineering program. The last two years are as follows:

132 hours required for graduation

Junior

Fall semester	Course	Sem. hrs.
EE 519	Electric Circuits & Controls	4
STAT 510	Introductory Probability & Statistics I	3
CHE 352	Engineering Materials	3
IE 551	Work Design	3
CE 530	Statics & Dynamics	4
IE 015	Engineering Assembly	0
		17

Spring semester

	Major electives	6
IE 501	Industrial Management	3
IE 050	Industrial Plant Studies	0
IE 015	Engineering Assembly	0
IE 352	Tool Engineering	3
CE 533	Mechanics of Materials	3
		15

Senior

Fall semester

IE 553	Production Planning & Inventory Control	3
IE 530	Industrial Project Evaluation	3
1E 571	Introduction to Operations Research I	3
IE 552	Production Process Engineering	3
ENGL 415	Written Communication for Engineers	3
IE 621	Numerical Control of Machine Tools	3
IE 015	Engineering Assembly	0
		18

Spring semester

	Technical electives	3
	Major electives	3
IE 554	Industrial Facilities Layout & Design	3
ME 513	Thermodynamics I	3
IE 015	Engineering Assembly	0
	Humanities or social science electives	3
		15

Major electives approved list

STAT 511	Introductory Probability & Statistics II	3
IE 352	Tool Engineering	3
IE 502	Industrial Management II	3
IE 541	Statistical Quality Control	3
IE 552	Production Process Engineering	3
IE 572	Introduction to Operations Research II	3
IE 573	Industrial Simulation	3
IE 609	Occupational Safety & Health	3
IE 621	Numerical Control of Machine Tools	3
IE 625	The Man-Environment System	3
IE 751	Applied Decision Theory	3

Courses in industrial engineering

Undergraduate credit

IE 015. Engineering Assembly. (0) I, II. Presentation by students of abstracts and reviews of articles in the journals of their respective societies or in the technical press of their profession, and reports of engineering projects, industrial experiences, and original investigations conducted by the student branches of the professional engineering societies. Occasionally, two or more of these individual groups unite for lectures by practicing engineers and by members of the engineering and university faculties. One hour of lec. a week; sophomore, junior, and senior years. IE-015-0-0913

IE 050. Industrial Plant Studies. (0) II. Trip to industrial centers for study of facilities of special interest to industrial engineering students. Pr.: Junior standing in industrial engineering. IE-050-2-0913

IE 120. Introduction to Industrial Engineering. (2) II. A survey of functions in the industrial organization including management, organization, work design, personnel; quality, inventory and production control, and ancillary activities. Two hours rec. a week. IE-120-0-0913

IE 241. Production Processes. (3) I, II. The study of modern industrial processes for production. Basic mechanics of metal machining and forming; flow and solidification of molten alloys; welding and heat treatment. Emphasis will be placed on actual production operations. One hour rec. and six hours lab a week. IE-241-1-0913

IE 341. Manufacturing Processes. (2) II. In odd years. Treats the effect of processes on material properties such as plastics, castings, welding, machinery, hot and cold forming, machineability testing, and production analysis of automatic and semiautomatic machine tools. One hour rec. and three hours lab a week. Pr.: IE 241. Credit for this course shall not be applied toward the Industrial Engineering degree. IE-341-1-0913

IE 372. Computers and Data Processing. (2) I, II, S. The use of computers in the solution of engineering and management problems. One hour rec. and three hours lab a week. IE-372-1-0913

IE 443. Quality Assurance. (2) I. In odd years. Quality assurance considering product design, statistical process control, and statistical product control. Two hours rec. a week. Pr.: Junior standing or above and STAT 320. Credit for this course shall not be applied toward the Industrial Engineering degree. IE-443-0-0913

IE 481. Motion and Time Study. (2) II. In even years. Concepts of an industrial society; the design process; aids in job design; recommended design procedures; determination of the time for a task; implementation of the design. One hour rec. and two hours lab a week. Pr.: Junior standing or above. Credit for this course shall not be applied toward the Industrial Engineering degree. IE-481-1-0913

IE 484. Factory Layout. (2) I. In odd years. Design of a production system including consideration of material handling, building noise, illumination, and interior climate. One hour rec. and three hours lab a week. Pr.: IE 241 and IE 481. Credit for this course shall not be applied toward the Industrial Engineering degree. IE-484-1-0913

IE 499. Honors Research in Industrial Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering Honors Program. A report is presented orally and in writing during the last semester. IE-499-4-0913

Undergraduate and graduate credit in minor field

IE 501. Industrial Management. (3) I, II. Basic functions in an industrial organization and their interrelationships; management considerations involving product, process, plant, and personnel. Three hours rec. a week. Pr.: Sophomore standing in engineering or consent of instructor. IE-501-0-0913

IE 502. Industrial Management II. (3) I. Job analysis and evaluation, selection, training, and other considerations for new employees from the industrial engineering standpoint. Three hours rec. a week. Pr.: Junior standing in engineering. IE-502-0-0913

IE 530. Industrial Project Evaluation. (3) I. The evaluation of industrial project alternatives by the construction and analysis of mathematical models. Basic concepts, with an emphasis on constrained and unconstrained deterministic and probabilistic evaluation methodology, data analysis, and replacement theory. Three hours rec. a week. Pr.: MATH 222. IE-530-0-0913

IE 533. Interior Ergonomics. (3) I, II. Factors influencing the human use of interior spaces. Design for health, safety, performance, comfort and pleasantness. Emphasis on human characteristics, evaluation, and environmental effects. Three hours rec. a week. Pr.: Junior standing or above. IE-533-0-0913

IE 541. Statistical Quality Control. (3) II. Frequency distributions, normal, binomial and Poisson distributions. Control charts on means, fraction defective and number of defects. Dodge-Romig and Military Standard Sampling Plans. Three hours rec. a week. Pr.: STAT 510 or equiv. IE-541-0-0913

IE 550. Tool Engineering. (3) II. Study of basic metal-working processes and the new developments in metal cutting and forming. Design of jigs, fixtures, dies, and other tooling for effective production. Two hours rec. and three hours lab a week. Pr.: IE 241; Pr. or conc.: CE 533. IE-550-1-0913

IE 551. Work Design. (3) I. Motion and time study; process analysis and charting; principles of motion economy and ergonomics; work stations and environments; biomechanics; micromotion analysis and an introduction to standard data systems. Two hours rec. and three hours lab a week. Pr.: IE 241. IE-551-1-0913

IE 552. Production Process Engineering. (3) II. Advanced production techniques, an introduction to production machinery and controls, including numerical control processes. Two hours rec. and three hours lab a week. Pr.: IE 241. IE-552-0-0913

IE 553. Production Planning and Inventory Control. (3) I. Principles, techniques, and applications of production planning and control and inventory control. Two hours rec. a week. Pr.: IE 372 and MATH 222. IE-553-0-0913

IE 554. Industrial Facilities Layout and Design. (3) II. Comprehensive design of an industrial production system; application of undergraduate industrial engineering sequence. Two hours rec. and three hours lab a week. Pr.: IE 553. IE-554-1-0913

IE 571. Introduction to Operations Research I. (3) I, II. Formulation of the linear programming model and solution by graphical, algebraic, and simplex techniques. Sensitivity analysis using dual-simplex method. The transportation and assignment models and critical path method. Three hours rec. a week. Pr.: MATH 222. IE-571-0-0913

IE 572. Introduction to Operations Research II. (3) II. Further optimization techniques, including elementary treatment of non-linear programming and dynamic programming. The queueing model. Three hours rec. a week. Pr.: IE 571, and STAT 510. IE-572-0-0913

IE 573. Industrial Simulation. (3) II. Introduction to modeling of industrial processes using digital simulations. The effect of simulation languages on modeling concepts will be stressed. Three hours rec. a week. Pr.: IE 372, STAT 510. IE-573-0-0913

IE 575. Quantitative Techniques in Industrial Engineering. (3) I, II. Problem formulation and conceptual models; application of finite mathematics and other techniques to problems of industrial engineering and management. Three hours rec. a week. Pr.: MATH 222. IE-575-0-0913

Undergraduate and graduate credit

IE 601. Introduction to Systems Management. (3) I, II. A general introduction to the formulation and mathematical solution of management and business problems. Includes the formulation of business and management problems and their solutions, utilizing optimization theory, finite mathematics, and statistical techniques. Three hours rec. a week. Pr.: MATH 222 and consent of instructor. IE-601-0-0913

IE 603. Topics in Industrial Engineering. (Var.) I, II, S. Case studies of industrial firms and recent developments in the fields of industrial engineering and management. Pr.: IE 501, IE 571, or consent of instructor. IE-603-0-0913

IE 609. Occupational Safety and Health. (3) I, II. Hazards in occupational environments and their elimination or mitigation through quantitative analyses and engineering design. Two hours rec. and three hours lab a week. Pr.: Junior standing. IE-609-1-0913

IE 621. Numerical Control of Machine Tools. (3) I. Translation of information on engineering drawings through programming to tape preparation; application of computer programs to simplify control operations. Two hours rec. and three hours lab a week. Pr.: IE 241, IE 372. IE-621-1-0913

IE 625. The Man-Environment System. (3) II. Basic structure and performance of the human, viewed as a component in information processing and control systems. Effect of visual, auditory, and thermal environments. Two hours rec. and two hours lab a week. Pr.: Senior standing in engineering. IE-625-0-0913

IE 651. Standard Data Systems. (3) I. Microscopic and macroscopic standard data systems; commercial versions; company-developed plans; programmed standard data systems. Three hours rec. a week. Pr.: IE 372. IE-651-0-0913

IE 652. Industrial Ergonomics. (3) I, II. The design process, work analysis techniques, principles of work organization, work station and hand tools. Facilities management. Lighting, noise, and industrial hygiene. Time determination. Work standards. Three hours rec. a week. Pr.: MATH 222 and consent of instructor. IE-652-0-0913

IE 671. Topics in Automated Factory Concepts. (3) II. Introduction to Concepts of Automation, Automatic transfer lines and CAD/CAM. Emphasis on robots and their role in automated factories. Concepts of group technology, computer aided process planning. Automated material handling equipment for automated factories. Three hours lec. a week. Pr.: IE 241, IE 372, and IE 553. IE-671-0-0913

IE 685. Principles of Manufacturing Information Systems. (3) I. Introduction to the theory and concepts of information for manufacturing. Design of manufacturing systems such as MRP, SFRS, CAD/CAM etc. Concerns of integration and man-machine interface in manufacturing systems. Three hours lec. a week. Pr.: IE 241, IE 372, and IE 533. IE-685-0-0913

IE 751. Applied Decision Theory. (3) I, II. Bayes theorem, Bayesian estimators, utility, loss function and risk, minimax strategies, elementary game theory. Pr.: STAT 511 or STAT 770. IE-751-0-0913

Graduate credit

IE 801. Problems in Industrial Engineering. (Var.) I, II, S. Pr.: Graduate standing. IE-801-3-0913

IE 805. Engineering Administration. (3) I. Engineering project administration; organization dynamics; quantitative factors in decision-making; application of computerized and non-computerized games. Two hours rec. and three hours lab a week. Pr.: IE 502 or consent of instructor. IE-805-1-0913

IE 811. Advanced Production and Inventory Control. (3) I. Analytical and mathematical methods of making decisions on production, inventories, human resources, and shipping in modern industrial plants. Three hours rec. a week. Pr.: IE 553 or consent of instructor. IE-811-0-0913

IE 842. Reliability Theory. (3) I. In alternate years. The mathematics of reliability theory. The hazard function. Calculation of the failure density and mean life for series, parallel systems, and various types of standby systems. Hypotheses tests on mean life. Life testing with truncation. Three hours rec. a week. Pr.: STAT 511 orequiv. IE-842-0-0913

IE 850. Ergonomics. (3) I, II. The design and analysis of applied experimental research on human behavior as applied to engineering systems. An experimental project. Two hours rec. and three hours lab a week. May be repeated once for credit with consent of instructor. Pr.: STAT 702 or STAT 703, or STAT 704 and STAT 705. IE-850-0-0913

IE 865. Simulation of Industrial and Management Systems. (3) II. This course is concerned with simulating industrial management systems on computers utilizing Monte Carlo techniques and simulation languages. Numerical methods related to simulation are to be covered. Three hours rec. a week. Pr. or conc.: STAT 770 or consent of instructor. IE-865-0-0913

IE 872. Industrial Forecasting Techniques and Applications. (3) I. The problems of model construction for industrial forecasting. The application of least squares, regression, exponential smoothing, and adaptive fitting will be studied in solving industrial engineering problems. Three hours rec. a week. Pr.: STAT 511 or 705. IE-872-0-0913

IE 874. Operations Research I. (3) I. A study of the methods of operations research including formulation of models and derivation of solutions by various optimization techniques. Introduction to deterministic models and techniques, including optimization techniques, sequencing and replacement, linear programming, geometric programming, and dynamic programming. Three hours rec. a week. Pr. or conc.: IE 572. IE-874-0-0913

IE 881. Linear Programming. (3) II. Development of the theory of linear programming and related topics including simplex method, duality theory, integer programming, transportation methods, and stochastic linear programming. Application to industrial problems and the use of computer solutions are emphasized. Three hours rec. a week. Pr.: IE 575. IE-881-0-0913

IE 892. Graduate Seminar in Industrial Engineering. (1) I, II. Maximum total: three credit hours. Presentation and discussion of papers on industrial engineering subjects. One two-hour seminar a week. IE-892-0-0913

IE 898. Master's Report. (Var.) I, II, S. Topics selected with approval of major professor and department head. IE-898-4-0913

IE 899. Master's Thesis. (Var.) I, II, S. Topics selected with approval of major professor and department head. IE-899-4-0913

IE 950. Ergonomics (Human Factors) Engineering II. (3) II. The design and analysis of applied experimental research on human behavior as applied to engineering systems. An experimental project. Three hours rec. a week. Pr.: STAT 702 or 703. IE-950-0-0913

IE 971. Industrial Queueing Processes. (3) I, II. Introduction to the queueing process and theory of queues; analysis of single and multistation queues; application to production, materials handling, inventory, and maintenance systems. Three hours rec. a week. Pr.: STAT 770. IE-971-0-0913

IE 973. Industrial Systems Analysis. (3) II. Analysis and synthesis of automatic control systems with application to machines and processes and industrial management systems. A study of optimal control, stability, and sensibility of industrial management systems. Three hours rec. a week. Pr. or conc.: IE 575. IE-973-0-0913

IE 975. Operations Research II. (3) II. A continuation of IE 874. Introduction to stochastic models and techniques including queueing theory, simulation, non-linear programming, calculus of variations, maximum principle, and forecasting. Three hours rec. a week. Pr.: IE 874, STAT 770. IE-975-0-0913

IE 976. Scheduling Theory. (3) I, II. Project scheduling, assembly line balancing, shop scheduling, basic structure, measures of performance, combinatorial and statistical aspects. Various approaches to the analysis of shop scheduling. Three hours rec. a week. Pr.: Consent of instructor. IE-976-0-0913

IE 982. Non-linear Programming. (3) I, II. Study of non-linear models and their solution. Topics covered are non-linear programming including Kuhn-Tucker theory, quadratic programming, separable programming, geometric programming, gradient and search methods, quasi-linearization, and invariant imbedding. Three hours rec. a week. Pr.: IE 975. IE-982-0-0913

IE 983. Dynamic Programming. (3) I, II. A study of the optimization of multistage decision processes based on the application of the principle of optimality. Stochastic and deterministic models are developed. Three hours rec. a week. Pr.: IE 874, STAT 770. IE-983-0-0913

IE 990. Advanced Topics in Operations Research. (Var.) I, II, S (6 hrs. maximum). Study of topics related to operations research not covered in other courses. Selected according to the interests and needs of graduate students. May be repeated. Pr.: Consent of instructor. IE-990-0-0913

IE 999. Dissertation Research. (Var.) I, II, S. Topics selected with approval of major professor and department head. IE-999-4-0913

Mechanical Engineering

Paul L. Miller,* head of department

Professors Appl,* Azer,* Crank,* Gorton,* Huang,* Kipp,* Lindholm,* Miller,* Rohles,* Thompson,* Turnquist,* and Walker;* Associate Professors Ball,* Beck,* Hayter,* Jones,* and Sinha;* Assistant Professor Eggeman;* Emeriti: Professors Brainard, Duncan, Flinner, Helander, Hobson, Messenheimer, Nesmith, Pauli, Tripp, and Wood.

Undergraduate study

Mechanical engineering graduates render professional services that vary from the development of machines to the management of industrial operations; from theoretical systems to the satisfaction of societal needs.

Mechanical engineering deals with the conversion, transfer, and control of energy for the benefit of man.

To provide a background for this wide range of activities the mechanical engineering curriculum is founded on a broad base of the basic sciences of mathematics, physics, chemistry, and mechanics. The curriculum includes engineering science courses in the sophomore and junior years and engineering application courses in the junior and senior years. Laboratory courses and humanistic and social science electives are integrated through the curriculum. The entire curriculum serves as preparation for the senior design laboratory where a team of three to five students is assigned to work on an authentic engineering problem supplied by an industrial sponsor. This brief internship gives the new mechanical engineering graduate the experience and confidence to move quickly into a productive and satisfying career.

Because of the broad and fundamental nature of the undergraduate curriculum, mechanical engineering provides an excellent background for careers in such fields as law, medicine, social services, urban design, and business management.

The electives in the curriculum provide the opportunity for students to develop their own special interests. Students with clear career objectives may be permitted to substitute appropriate courses for some of the required courses.

Graduate study

Major work is offered, leading to the master of science and doctor of philosophy degrees. Prerequisite to major graduate work in the field of mechanical engineering is the completion of a four-year curriculum substantially equivalent to that required of undergraduates in mechanicalmentation are available for experimental work in these areas. Graduate students also have ac-

cess to the University's digital and analog computers and the various engineering laboratories and shops.

Many research and teaching assistantships and free-grant fellowships are available to graduate students.

Curriculum in mechanical engineering (ME)

Bachelor of Science in Mechanical Engineering
134 hours required for graduation

Freshman

Fall semester	Course	Sem. hrs.
CHM 210	Chemistry I	4
ENGL 100	English Composition I	3
MATH 220	Analytic Geometry & Calculus I	4
PE 101	Concepts in Physical Education	1
SPCH 105	Oral Communication I	2
ME 400	Computer Applications in Mechanical Engineering	2
		16
Spring semester		
CHM 230	Chemistry II	4
ENGL 120	English Composition II*	
	or	
	Humanities or social science electives	3
MATH 221	Analytic Geometry & Calculus II	4
IE 241	Production Processes	3
ME 212	Engineering Graphics I	2
		16

Sophomore

Fall semester		
ECON 110	Economics I	3
MATH 222	Analytic Geometry & Calculus III	4
PHYS 213	Engineering Physics I	5
IE 372	Computers & Data Processing	2
ME 217	Engineering Graphics II	3
		17
Spring semester		
MATH 240	Elementary Differential Equations	4
PHYS 214	Engineering Physics II	5
CHE 352	Engineering Materials I	3
CE 333	Statics	3
	Humanities or social science electives	3
		18

Junior

Fall semester		
CE 533	Mechanics of Materials	3
EE 519	Electric Circuits & Control	4
ME 513	Thermodynamics I	3
ME 512	Dynamics	3
ENGL 415	Written Communication for Engineers	3
		16
Spring semester		
EE 589	Circuits & Machines Lab	2
ME 523	Thermodynamics II	3
ME 533	Machine Design I	3
ME 535	Mechanical Engineering Lab I	3
ME 571	Fluid Mechanics	3
	Humanities or social science electives	3
		17

Senior

Fall semester		
ME 527	Heat Transfer	3
ME 583	Mechanical Engineering Lab II	2
ME 560	Engineering Economics	3
	Technical electives	6
	Humanities or social science electives	3
		17
Spring semester		
ME 563	Machine Design II	3
ME 575	Mechanical Engineering Design Lab	2
	Technical electives	9
	Humanities or social science electives	3
		17

*Optional if requirements for Written Communication for Engineers (ENGL 415) are met from English Composition I.

Humanities and social science electives are to be selected from the approved list.

Of the fifteen semester hours of technical electives shown above, one course must be chosen from approved course lists in each of the following areas: machine design/solid mechanics; thermal sciences; automatic controls.

The engineering science requirements will be satisfied by the required courses in this curriculum.

Courses in mechanical engineering

Undergraduate credit

ME 212. Engineering Graphics I. (2) I, II, S. Technical sketching, study of basic principles of projective geometry, multiview drawings, pictorials, reading and interpreting drawings, and creative or conceptual design. Three hours lab and one hour rec. a week. Pr.: Plane Geometry. ME-212-1-0910

ME 217. Engineering Graphics II. (3) I, II. Advanced study and application of projective geometry principles, functional design, detail and assembly layouts, design of charts and graphs, and conceptual design. Five hours lab and one hour rec. a week. Pr.: ME 212. ME-217-1-0910

ME 390. Topics in Mechanical Engineering. (Var.) I, II, S. Topics selected in consultation with instructor. Intended for interdisciplinary studies or innovative studies in mechanical engineering. Pr.: Consent of instructor. ME-390-0-0910

ME 400. Computer Applications in Mechanical Engineering. (2) I, II. The development and application of computer techniques to the problems of design and analysis as applied to Mechanical Engineering, including computer programming. Two hours rec. a week. Pr.: MATH 221 and IE 372. ME-400-0-0910

ME 499. Honors Research in Mechanical Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering Honors Program. A report is presented orally and in writing during the last semester. ME-499-4-0910

Undergraduate and graduate credit in minor field

ME 512. Dynamics. (3) I, II, S. Vector treatment of kinematics, Newton's Laws, work and energy, impulse and momentum, with applications to problems of particle and rigid body motion. Three hours rec. a week. Pr.: CE 333, MATH 222. ME-512-0-0910

ME 513. Thermodynamics I. (3) I, II, S. Properties of the pure substance. The first and second laws of thermodynamics. Three hours rec. a week. Pr.: PHYS 213; MATH 222. ME-513-0-0910

ME 523. Thermodynamics II. (3) I, II. Continuation of Thermodynamics I. Gas mixtures, psychrometry, generalized thermodynamic relations and reactive systems. Three hours rec. a week. Pr.: ME 513. ME-523-0-0910

ME 533. Machine Design I. (3) I, II. Displacement, velocity, and acceleration analysis of machine elements—cams, gears, and other mechanisms. A brief introduction to dynamics of machines. Three hours rec. a week. Pr.: ME 512. ME-533-0-0910

ME 535. Mechanical Engineering Laboratory I. (3) I, II. Theory and application of mechanical engineering instrumentation and measurements. One hour rec. and six hours lab a week. Pr.: ME 513, EE 519. Pr. or conc.: ME 400. ME-535-1-0910

ME 540. Modeling and Analysis of Dynamic Systems. (3) I, II. Application of physical laws, mathematical methods and computers to development and interpretation of models for physical systems of engineering interest. Emphasis is on the methods of modeling rather than the systems modeled. Examples will be taken from all areas of engineering. Three hours rec. a week. Pr.: PHYS 214, MATH 240, ME 512. ME-540-0-0910

ME 560. Engineering Economics. (3) I, II. Economic analysis of problems as applied in engineering. Three hours rec. a week. Pr.: ECON 110, junior standing in Engineering. ME-560-0-0910

ME 563. Machine Design II. (3) I, II. Design and analysis of machine elements, such as shafting, springs, screws, belts, brakes, clutches, gears, and bearings, with emphasis on strength, rigidity, and wear qualities. Three hours rec. a week. Pr.: CE 533, ME 533. ME-563-0-0910

ME 571. Fluid Mechanics. (3) I, II, S. Physical properties; fluid statics; dynamics of ideal and real fluids (for incompressible and compressible flow); impulse and momentum; laws of similitude; dimensional analysis; flow in pipes; flow in open channels; flow about immersed objects. Three hours rec. a week. Pr.: ME 512. Pr. or conc.: ME 513. ME-571-0-0910

ME 573. Heat Transfer. (3) I, II. Fundamentals of conduction, convection, and radiation; principles of heat exchanger design and dimensional analysis. Three hours rec. a week. Pr.: ME 571, MATH 240. ME-527-0-0910

ME 575. Mechanical Engineering Design Laboratory. (2) I, II. Application of the principles of the design process in the solution of engineering industrial-type problems with direct involvement of industry. Six hours lab a week. Pr. or conc.: ME 573, ME 533. ME-575-1-0910

ME 583. Mechanical Engineering Laboratory II. (2) I, II. Analysis of heat transfer and fluid-flow processes, mechanical systems, automatic control; instrumentation, design of experiments. Six hours lab a week. Pr.: ME 535. ME-583-1-0910

Undergraduate and graduate credit

ME 620. Internal Combustion Engines. (3) I. Analysis of cycles, design and performance characteristics. Three hours rec. a week. Pr.: ME 523. ME-620-0-0910

ME 622. Environmental Engineering I. (3) II. Psychrometry; heating-cooling system design; air quality measurement and control; effect of air pollution. Three hours rec. a week. Pr.: ME 573. ME-622-0-0910

ME 628. Aerodynamics I. (3) II. A general introduction to aerodynamics including the analysis of lift, drag, thrust, and aircraft performance for subsonic aircraft. Three hours rec. a week. Pr.: ME 571, MATH 240. ME-628-1-0910

ME 633. Thermodynamics of Modern Power Cycles. (3) I. The first and second law analysis of modern steam cycles for both fossil-fuel and nuclear-fuel installations. Cycle efficiency and factors affecting performance, such as cycle design, load factor, and auxiliaries. Thermal pollution resulting from steam cycles. Three hours rec. a week. Pr.: ME 513. ME-633-0-0913

ME 640. Automatic Controls. (3) I. Analysis of the dynamic behavior of mechanical, thermal, fluid, and electrical elements using basic physical laws. Transient and frequency response characteristics, stability and sensitivity analysis. Design of automatic control systems. Three hours rec. a week. Pr.: ME 535. ME-640-0-0910

ME 645. Fluid Control Systems.(3) II. Study of hydraulic, pneumatic and fluidic control systems and their application in industry. Analysis and modeling of system components including pumps, valves, and actuators. Design techniques for both feedback and non-feedback systems. Laboratory demonstrations. Three hours rec. a week. Pr.: ME 535. ME-645-1-0910

ME 656. Machine Vibrations I. (3) I, II. A general consideration of free and forced vibration in machines for various degrees of freedom; critical speed; vibration isolation. Three hours rec. a week. Pr.: ME 512, MATH 240. ME-656-0-0910

ME 680. Solar Energy Thermal Processes. (3) II. Fundamentals of solar radiation, its measurement and techniques for predicting its magnitude; an introduction to the heat transfer involved in solar collectors; modeling techniques for flat-plate and focusing-collector systems; storage system performance; an overview of solar energy thermal systems such as solar heating and cooling; solar system economics. Three hours rec. a week plus periodic laboratory experiments. Pr.: ME 573. ME-680-0-0910

ME 699. Problems in Mechanical Engineering. (Var.) I, II, S. Pr.: Approval of department head. ME-699-3-0910

ME 713. Advanced Thermodynamics I. (3) I. Application of the laws of thermodynamics to unsteady-flow processes; processes involving friction; available and unavailable portions of various forms of energy; the concept of flux mass, energy, available energy, and entropy. Three hours rec. a week. Pr.: ME 523, ME 571, MATH 240. ME-713-0-0910

ME 715. Gas Dynamics. (3) II. Properties of compressible fluids, subsonic and supersonic flow, steady and non-steady motion, with emphasis on one-dimensional flow. Three hours rec. a week. Pr.: MATH 240, ME 523, ME 571. ME-715-0-0910

ME 716. Intermediate Dynamics. (3) On sufficient demand. General vector principles of the dynamics of particles and rigid bodies; applications to orbital calculations, gyrodynamics and rocket performance; introduction to the energy methods of advanced dynamics. Three hours rec. a week. Pr.: ME 512, MATH 240. ME-716-0-0910

ME 718. Introduction to the Theory of Continuous Media. (3) I. Analysis of strain, motion, and stress; fundamental laws; constitutive equations; applications to fluid, elastic, and plastic media. Three hours rec. a week. Pr.: ME 512, MATH 240. ME-718-0-0910

ME 720. Intermediate Fluid Mechanics. (3) I. An introduction to the general analytical relations of fluid flow, viscous flow, turbulence, boundary-layer theory; applications. Three hours rec. a week. Pr.: ME 571, MATH 240. ME-720-0-0910

ME 722. Environmental Engineering II. (3) I. Study and analysis of environmental factors and man's response to these factors; air pollution, air cleaning, biological heat transfer; factors affecting comfort, health, learning, and productivity. Two hours rec. and three hours lab a week. Pr.: Four hours biological science or consent of instructor. Pr.: ME 622. ME-722-0-0910

ME 725. Combustion. (3) I. Dynamics and thermodynamics of combustion processes; solid, liquid, and gaseous fuels. Three hours rec. a week. Pr.: ME 573. ME-725-0-0910

ME 728. Aerodynamics II. (4) I. Compressibility phenomena, power requirements, airplane performance; stability and control. Three hours rec. and three hours lab a week. Pr.: ME 628. ME-728-1-0910

ME 730. Control Systems Analysis and Design. (3) II. Utilization of classical analysis techniques for control system compensation. State space-control theory fundamentals are presented in addition to an introductory treatment of several major systems areas. Pr.: EE 530 or ME 712. (Cross-listed with EE 730.) ME-730-0-0910

ME 733. Automatic Controls Laboratory. (3) II. Experimental methods for automatic control systems and components. Six hours lab a week. Pr. or conc.: ME 730. ME-733-1-0910

ME 736. Applied Elasticity. (3) II. Analysis of stress and strain at a point in an elastic medium; two-dimensional problems in rectangular and polar coordinates; torsion of bars; energy principles; numerical methods. Three hours rec. a week. Pr.: CE 533. ME-736-0-0910

ME 738. Experimental Stress Analysis. (3) II. Experimental methods of investigating stress distributions. Photoelastic models, photoelastic coatings, brittle coatings, and resistance strain gauges applied to static and dynamic problems. Two hours rec. and three hours lab a week. Pr. or conc.: CE 533. ME-738-1-0910

ME 746. Random Vibration. (3) I. In even years. Theory of random processes and application to random vibration of mechanical systems. Three hours rec. a week. Pr.: ME 656. ME-746-0-0910

ME 756. Machine Vibrations II. (3) II. Advanced consideration of systems having free and forced vibrations, with particular reference to several degrees of freedom, distributed mass, generalized coordinates, and non-linear forms. Three hours rec. a week. Pr.: ME 656. ME-756-0-0910

ME 757. Kinematics. (3) II. In odd years. Geometry of constrained motion applied to point paths, specific input-output relations, function generators, kinematic synthesis. Three hours rec. a week. Pr.: ME 533. ME-757-0-0910

ME 760. Engineering Analysis I. (3) I. Methods of analysis employed in the solution of problems selected from various branches of engineering. Emphasis is placed on discrete systems. Three hours rec. a week. Pr.: MATH 240 and senior standing in engineering. ME-760-0-0920

Graduate credit

ME 813. Advanced Thermodynamics II. (3) II. Kinetic theory and statistical thermodynamics, with emphasis on transport properties and engineering applications. Selected topics from classical thermodynamics. Pr.: ME 523, ME 573 or consent of instructor. ME-813-0-0910

ME 819. Engineering Acoustics. (3) II. In odd years. A study of the generation, propagation, and reproduction of sound, with applications to the transmission and reduction of sound in materials and structures, and the design of acoustic enclosures and filters. Three hours rec. a week. Pr.: ME 718 or ME 756. ME-819-0-0910

ME 831. Boundary Layer Theory. (3) II. The development and solution of various laminar boundary layer problems involving momentum, heat, and mass transfer for a compressible viscous fluid. Three hours rec. a week. Pr.: ME 573. ME-831-0-0910

ME 860. Engineering Analysis II. (3) II. Continuation of Engineering Analysis I. Emphasis placed on continuous systems. Three hours rec. a week. Pr.: ME 760 or consent of instructor. ME-860-0-0910

ME 890. Laboratory Investigations in Mechanical Engineering. (Var.) I, II, S. Pr.: Approval of department head. ME-890-4-0910

ME 898. Master's Report. (Var.) I, II, S. Topics selected with approval of major professor and department head. ME-898-4-0910

ME 899. Master's Thesis. (Var.) I, II, S. Topics selected with approval of major professor and department head. ME-899-4-0910

ME 916. Advanced Topics in Mechanical Engineering. (Var.) I, II, S. A course reserved for study of current topics in mechanical engineering. Particular subject areas which may be included are: air conditioning, automatic controls, biomedical engineering, energy conversion, engineering design, environmental engineering, fluid and gas dynamics, heat transfer, kinematics, thermodynamics and vibrations. Topics announced when offered. Pr.: Consent of instructor. ME-916-0-0910

ME 935. Heat Conduction in Solids. (3) I. General differential equation of heat conduction and methods of solution for two-dimensional steady-rate transient heat flow, periodic heat flow, and internal heat sources. Three hours rec. a week. Pr.: ME 573. ME-935-0-0910

ME 942. Convection Heat Transfer. (3) II. Energy and momentum equations in convective heat transfer, laminar and turbulent thermal boundary layers, steady and non-steady convection problems. Three hours rec. a week. Pr.: ME 573. ME-942-0-0910

ME 999. Dissertation Research in Mechanical Engineering. Ph.D. level. (Var.) I, II, S. Pr.: Approval of department head and major professor. ME-999-4-0910

Nuclear Engineering

N. Dean Eckhoff,* head of department

Professors Donnert,* Eckhoff,* Faw,* Merklin,* Mingle,* Shultis,* and Simons;* Assistant Professor Hightower.

Undergraduate study

The curriculum leading to the B.S. in nuclear engineering is designed to prepare students for professional positions in industry, government, and private practice. Through technical electives, the student may organize a program suited to his particular needs and interests. The student may elect a program leading to engineering practice with various specialties or to postgraduate study in engineering, science, medicine, or law.

Graduate study

Major work is offered leading to the degrees Master of Science in Nuclear Engineering and Doctor of Philosophy in Engineering.

Applicants for graduate status are expected to hold the bachelor's degree with adequate preparation in mathematics and physical sciences. Programs of study will be arranged with a proper balance of subject matter from other fields to meet the needs of individual students.

Laboratory facilities: 250 kilowatt TRIGA Mark II Reactor with pulsing capability to 250,000 kilowatts; Radiation Shielding Facility on a 180-acre remote site with a full-scale house and other experimental shielding test structures, Co-60 sources; Neutron Activation Analysis Laboratory with multichannel analyzers, gamma-ray spectrometers, high speed printers, plotters and magnetic tape recorders; Nuclear Instrumentation Laboratory with lab stations containing digital logic systems, instrumentation modules for pulse analysis and systems timing, dual-beam oscilloscopes, pulse and wave form generators; Radioisotope Application Laboratory with instructional equipment for radiation detection and analysis; and thermoluminescent dosimeter systems; Shock-Tube Laboratory with instrumentation for studies of combustion kinetics, molecular rate processes, and transient thermal and hydraulic phenomena; Combustion Laboratory with a completely instrumented plug-flow drop furnace capable of handling coal, agricultural residues, municipal wastes, or mixtures of various combustibles, and a flat flame diagnostic system; An Analytical Laboratory with gas chromatographs, atomic absorption spectrometers, a Cary-14 spectrophotometer, a DU-spectrophotometer, a spinning band distillation column, a mass spectrometer, and a zone refiner; Applied Optics Laboratory with high-power argon ion laser and associated apparatus used in Doppler velocimetry, Raman scattering and holographic interferometry studies of heat, mass, and momentum transport phenomena. Other: graphite diffusion assembly, gamma irradiator, an auto- and cross-correlation noise analysis system, and analog computers.

Curriculum in nuclear engineering (NE)

Bachelor of Science in Nuclear Engineering
131 hours required for graduation

Freshman

Fall semester	Course	Sem. hrs.
NE 110	Nuclear Engineering Concepts	2
ENGL 100	English Composition I	3
CHM 210	Chemistry I	4
MATH 220	Analytic Geometry & Calculus I	4
PE 101	Concepts in Physical Education	1
	Humanities or social science electives	3
		17

Spring semester		
NE 120	Nuclear Engineering Computational Techniques	2
CHM 230	Chemistry II	4
ECON 110	Economics I	3
MATH 221	Analytic Geometry & Calculus II	4
ENGL 120	English Composition II*	
	or	
	Humanities or social science electives	3
		16

Sophomore

Fall semester		
CHE 350	Engineering Materials	2
PHYS 213	Engineering Physics I	5
MATH 222	Analytic Geometry & Calculus III	4
	Humanities or social science electives	6
		17

Spring semester		
NE 315	Introduction to Nuclear Engineering Analysis	3
ME 212	Engineering Graphics I	2
PHYS 214	Engineering Physics II	5
CE 530	Statics & Dynamics	4
	Humanities or social science electives	3
		17

Junior

Fall semester		
NE 500	Applied Nuclear Engineering Analysis	3
EE 519	Electric Circuits & Control	4
ME 513	Thermodynamics I	3
NE 325	Elements of Nuclear Engineering	3
	Technical electives	3
		16

Spring semester		
NE 512	Principles of Radiation Detection	3
NE 490	Neutron & Particle Interactions I	2
ME 571	Fluid Mechanics	3
NE 550	Radiation Protection Engineering	3
NE 515	Nuclear Engineering Materials	3
ENGL 415	Written Communication for Engineers	3
		17

Senior

Fall semester		
NE 630	Applied Reactor Theory	4
NE 645	Nuclear Reactor Thermal Hydraulics	4
	Technical electives	9
		17

Spring semester		
NE 692	Nuclear Engineering Design	3
NE 640	Reactor Operations Planning Lab	2
	Technical electives	10
		15

*English Composition II is optional if prerequisites for Written Communication for Engineers (ENGL 415) are met from English Composition I.

Humanities and social science electives are to be selected from the catalog list and need not be taken in the order listed in the curriculum.

A technical elective program of study is chosen in consultation with the student's advisor and presented for approval to the department faculty.

Courses in nuclear engineering
Undergraduate credit

NE 110. Nuclear Engineering Concepts. (2) I. This first course in the nuclear engineering curriculum acquaints freshman students with the professional activities and responsibilities of nuclear engineers. It presents this information through lectures, recitations, and laboratory demonstrations. Two hours lec. a week. NE-110-0-0920

NE 120. Nuclear Engineering Computational Techniques. (2) II. Application of electronic calculators, digital computers, and graphical methods to the solution of nuclear engineering problems. One hour lec. and three hours lab a week. Pr.: MATH 220 or MATH 225 and NE 110 or DEN 160. NE-120-0-0920

NE 315. Introduction to Nuclear Engineering Analysis. (3) II. Introduction to analytical, statistical, and numerical analysis as applied to nuclear engineering, including computer programming. Three hours rec. a week. NE-315-0-0920

NE 325. Elements of Nuclear Engineering. (3) I, II. Nuclear reactions, nuclear energy releases, ionizing radiation, radiation attenuation; introduction to nuclear reactor concepts of criticality, multiplication factor, period, reactivity, neutron lifetime, fission product poisoning; introduction to reactor instrumentation and control, standards for protection against radiation, health physics, nuclear safety, licensing, survey and monitoring instrumentation, instrument calibration, calculation of dose, dose rates, determination of maximum permissible concentrations and body burdens. Three hours lec. a week. Pr.: MATH 221, PHYS 213. NE-325-0-0920

NE 410. Introduction to Nuclear Engineering. (3) I, II, S. A course to acquaint non-nuclear engineers with introductory aspects of nuclear engineering; a study of nuclear reactions, reactor core calculations, reactor safety and dynamics, shielding, fuels, waste disposal, electric power generation and radioisotope applications engineering. Three hours rec. a week. Pr.: Junior standing in engineering or engineering technology. NE-410-0-0920

NE 490. Neutron and Particle Interactions I. (2) II. Engineering approach to the classical mechanics of the interaction of neutrons and other radiation with matter; production and detection of neutrons and other types of nuclear radiation. Two hours rec. a week. Pr.: NE 325. NE-490-0-0920

NE 499. Honors Research in Nuclear Engineering. (Var.) I, II. Individual research problem selected with approval of faculty advisor. Open to students in the College of Engineering Honors Program. A report is presented orally and in writing during the last semester. NE-499-4-0920

Undergraduate and graduate credit in minor field

NE 500. Applied Nuclear Engineering Analysis. (3) I. Methods and applications of analytical, statistical, and numerical analysis as applied to nuclear engineering, including computer programming. Three hours rec. a week. Pr.: Junior standing in engineering. NE-500-0-0920

NE 512. Principles of Radiation Detection. (3) II. Operating principles and general properties of devices used in the detection and characterization of ionizing radiation. Utilization of detectors to measure experimental parameters important to the understanding of detector properties, radiation interactions, and the characterization of radiation fields. Two hours rec. and three hours lab a week. Pr.: NE 325 or NE 410. NE-512-1-0920

NE 515. Nuclear Engineering Materials. (3) II. An investigation of the nuclear properties, metallurgy, the processing of nuclear materials, and the behavior of fuels and components in a radiation environment. Three hours lec. a week. Pr.: NE 325, CHE 352. NE-515-0-0920

NE 550. Radiation Protection Engineering. (3) II. Principles of radiation protection. Radiation shielding, radiation dosimetry and regulatory aspects of radiation protection. Special applications in nuclear plant design. Three hours rec. a week. Pr.: NE 325. NE-550-0-0920

Undergraduate and graduate credit

NE 620. Problems in Nuclear Engineering. (Var.) I, II, S. Specific studies in current and advanced problems in various phases of nuclear engineering. Pr.: Consult head of department. NE-620-3-0920

NE 630. Applied Reactor Theory. (4) II. Theory of diffusion and slowing down of neutrons with application to critical and subcritical nuclear reactors. Measurement of various reactor physics parameters. Three hours rec. and three hours lab a week. Pr.: NE 490. NE-630-0-0920

NE 635. Plasma Physics. (3) I. Fundamental properties of plasmas; motion of ions and electrons in electromagnetic fields; plasmas as magneto-hydrodynamic fluids; plasma waves; diffusion phenomena in plasmas; electric resistivity of plasmas; equilibrium and plasma stability; kinetic theory of plasmas. Three hours rec. a week. (Cross-listed with PHYS 635.) Pr.: PHYS 532 or EE 557, and PHYS 621. NE-635-0-0920

NE 640. Reactor Operations Planning. (2) II. Licensing, nuclear safety, and reactor operations. Measurement of nuclear reactor parameters. One hour lec. and three hours lab a week. Pr.: NE 512, NE 630. NE-640-0-0920

NE 645. Nuclear Reactor Thermal Hydraulics. (4) I. Introduction to the fluid mechanics and heat transfer mechanisms in reactor cooling. Analysis of power cycles. Basic reactor thermal design. Three hours rec. and three hours lab a week. Pr.: NE 325, ME 571, ME 513. NE-645-0-0920

NE 675. Neutron and Particle Interactions II. (2) II. Engineering approach to the quantum mechanics of the interaction of neutrons and other nuclear radiations with matter; theoretical methods for the evaluation of nuclear reaction cross sections required for engineering applications. Two hours rec. a week. Pr.: NE 490, NE 500. NE-675-0-0920

NE 692. Nuclear Engineering Design. (3) II. Design and operation analysis of nuclear facilities including economics, resource management, licensing, and auxiliary systems. Three hours rec. a week. Pr.: NE 645, NE 630. NE-692-0-0920

NE 708. Nuclear Fuel Processing Laboratory. (1) I. Experimental investigation of the methods and principles of separation and purification as they apply to the production and recovery of nuclear fuel and materials. Three hours lab a week. Pr.: NE 515. NE-708-1-0920

NE 715. Radiation Shielding. (3) II. Introduction to important sources of radiation, kernel concepts, and application of diffusion and ray theory to shielding calculations; applications principally in the field of stationary nuclear reactor shielding. Three hours rec. a week. Pr.: NE 630. NE-715-0-0920

NE 720. Nuclear Systems Analysis. (3) II. Introduction to nuclear reactor kinetics and simulation. Linear stability of reactor systems. Noise analysis. Application of hybrid computers to nuclear systems analysis. Three hours rec. a week. Pr.: NE 630. NE-720-0-0920

NE 750. Direct Energy Conversion. (3) II. Principles and analysis of direct conversion phenomena, with special emphasis on direct conversion of nuclear energy including thermoelectric, thermoionic, photovoltaic, magneto-hydrodynamic and electrochemical processes. Three hours rec. a week. Pr.: NE 645. NE-750-0-0920

NE 761. Radiation Measurement Systems. (4) I. Principles of systems used to measure radiation. Applications to radiation monitoring, dosimetry, and spectroscopy. Three hours rec. and three hours lab a week. Pr.: NE 512. NE-761-0-0920

NE 762. Nuclear Instrumentation. (4) II. Design and analysis of nuclear instrumentation. Application to nuclear reactor control, radiation dosimetry, and nuclear spectroscopy. Three hours rec. and three hours lab a week. Pr.: EE 510 or 519, and NE 512. NE-762-1-0920

NE 772. Radiation Effects on Materials I. (3) I. General theory of radiation damage to solids. Specific effects of radiation on nuclear reactor components and materials of construction. Applications to nuclear reactor design. Three hours rec. a week. Pr.: NE 490. NE-772-0-0920

NE 774. Radiation Effects on Materials II. (3) II. General theory of radiation effects on liquids and gases. Principles of radiation chemistry, photochemistry, and biophysics. Medical, agricultural, and industrial applications. Three hours rec. a week. Pr.: NE 490 or CHM 595. NE-774-0-0920

Graduate credit

NE 806. Neutronics I. (3) I. Particle transport, theories of diffusion, numerical analysis of diffusion, transient core analysis. Three hours rec. a week. Pr.: NE 630. NE-806-0-0920

NE 808. Neutronics II. (3) II. Perturbation theory, core neutronic design, spatially dependent kinetics, reactor control. Three hours rec. a week. Pr.: NE 806. NE-808-0-0920

NE 810. Graduate Problems in Nuclear Engineering. (Var.) I, II, S. Specific studies in advanced problems in various phases of nuclear engineering. Pr.: Graduate standing and consent of head of department. NE-810-4-0920

NE 847. Nuclear Power Engineering I. (3) I. Principles of hydraulic and thermal analysis for nuclear power reactors. Advanced core design. Three hours rec. a week. Pr.: NE 692. NE-847-0-0920

NE 851. Nuclear Engineering Laboratory. (2) I. Reactor kinetics, reactor noise analysis determinations of B/1, reactor power calibration, auto- and cross-correlation techniques, pulsed neutron measurement, radiation shielding, radiation effects, activation analysis, neutron diffraction, and heat transfer. Six hours lab a week. Pr. or conc.: NE 806. NE-851-1-0920

NE 860. Advanced Topics in Nuclear Engineering. (Var.) I, II, S. A presentation of various special topics covering advanced nuclear engineering specialties. Pr.: Graduate standing and consent of head of department. NE-860-0-0920

NE 890. Nuclear Engineering Colloquium. (1) I, II. Presentation and discussion of progress reports on research, special problems, and outstanding publications in nuclear engineering and related fields. Pr.: Graduate standing in nuclear engineering. NE-890-0-0920

NE 899. Master's Thesis. (Var.) I, II, S. Topics selected with approval of major professor and department head. NE-899-4-0920

NE 947. Nuclear Power Engineering II. (3) II. Nuclear system analysis and design with computational considerations. System safety analysis. Three hours rec. a week. Pr.: NE 847. NE-947-0-0920

NE 999. Dissertation Research. (Var.) I, II, S. Topics selected with approval of major professor and department head. NE-999-4-0920

College of Home Economics

AGAN, ANNA TESSIE, Assoc. Prof. of Family Economics Emerita; Agr. Exp. Sta. (1929). BS 1927, Univ. of Neb.; MS 1930, Kan. St. Univ. (GF)

AHMADI, REZA, Instr. of Clothing, Textiles & Interior Design (1981). BA 1975, Fac. of Dec. Arts, Tehran, Iran; MA 1977, Fla. St. Univ.

ANNIS, PATTY SMITH, Asst. Prof. of Family Economics; Agr. Exp. Sta. (1958). BS 1955, Miss. St. Col. for Women; MS 1957, Univ. of Tenn. (GF)

AVERELL, ROBERT B., Adjunct Asst. Prof. of Clothing, Textiles, and Interior Design (1981). BA 1964, Univ. of Pa.; MS 1969, Rutgers.

BARTZ, JACQUELYN, Adjunct Instr. of Dietetics, Restaurant and Institutional Management (1975). BS 1965, MS 1967, Ohio St. Univ.

BASSLER, EUNICE M., Instr. of Foods and Nutrition (1981). MS 1979, Kan. St. Univ.

BERGEN, BETSY, Assoc. Prof. of Family and Child Development (1966). AB 1949, Ottawa Univ.; MS 1964, PhD 1972, Kan. St. Univ. (GF)

BOLLMAN, STEPHAN RAY, Prof. of Family and Child Development; Agr. Exp. Sta. (1966). BS 1957, MS 1963, PhD 1966, Iowa St. Univ. (GF)

BOWERS, JANE RAYMOND, Prof. and Head, Foods and Nutrition; Agr. Exp. Sta. (1966). BS 1962, MS 1963, PhD 1967, Kan. St. Univ. (GF)

BRESEE, RANDALL, Assoc. Prof. of Clothing, Textiles and Interior Design; Agr. Exp. Sta. (1978). BS 1971, Eastern Ill. Univ.; MS 1974, Southern Ill. Univ.; PhD 1979, Fla. St. Univ. (GF)

BRIGGS, BEVERLY, Asst. Prof. of Family and Child Development (1982). BS 1968, MS 1971, Univ. of Ill.; PhD 1982, Ohio St. Univ.

BROCKMAN, HELEN L., Prof. of Clothing, Textiles and Interior Design Emerita (1967). BA 1926, Univ. of Iowa. (GF)

BUCKLER, ROBERT, Adjunct Prof. of Family and Child Development (1982). AB 1971, UCLA; MD 1976, Georgetown Univ. School of Med.; MPH 1980, Johns Hopkins Univ.

BUTH, DENNIS K., Adjunct Asst. Prof. of Dietetics (1976). BS 1968, Wichita St. Univ.; MD 1972, Univ. of Kan.

CANNON, BARBARA, Instr. of Clothing, Textiles and Interior Design (1981). BS 1971, MS 1981, Kan. St. Univ.

CANTER, DEBORAH D., Assoc. Prof., Dieteties, Restaurant and Institutional Management (1977). BS 1972, MS 1974, PhD 1977, Univ. of Tenn. (GF)

CAUL, JEAN FRANCES, Prof. of Foods and Nutrition Emerita (1967). AB 1937, Lake Erie Col.; MA 1938, PhD 1942, Ohio St. Univ. (GF)

CLEVELAND, JANET R., Instr. of Family and Child Development (1983). BA 1980, Kan. St. Univ.

CORDY, ANN, Asst. Prof. of Clothing, Textiles and Interior Design (1983). PhD 1983, Univ. of Md.

CORMANY, ESTHER MARGARET, Assoc. Prof. of Clothing, Textiles and Interior Design Emerita; Agr. Exp. Sta. (1936). BS 1926, MS 1932, Kan. St. Univ. (GF)

CORPUS, KATHLEEN M., Instr. of Family Economics (1983). MA 1982, Wash. St. Univ.

CORRALES, RAMON, Adjunct Assoc. Prof. of Family and Child Development (1981). BA 1966, DeLaSalle Col. (Manila); MA 1968, Xavier Univ. (Philippines); PhD 1974, Univ. of Minn.

CRAIGIE, BARBARA, Asst. Prof. of Clothing, Textiles and Interior Design Emerita (1954). BA 1932, Univ. of Minn.; MA 1942, Univ. of Mo. (GF)

CREWS, PATRICIA C., Instr., Clothing, Textiles and Interior Design (1977). BS 1971, Va. Poly. & St. Univ.; MS 1973, Fla. St. Univ.

CROW, ERNEST W., Adjunct Asst. Prof. of Dietetics (1978). AB Friends Univ.; MD 1944, Univ. of Kan.

DANA, JANICE T., Instr. of Dietetics, Restaurant and Institutional Management (1979). BS 1964, Univ. of N.C.; MS 1966, Iowa St. Univ.

DAVIS, ALBERT J., Assoc. Prof. of Family and Child Development (1974). BS 1963, Fordham Univ.; MA 1964, Univ. of Conn.; PhD 1969, Pa. St. Univ. (GF)

DAVIS, ELIZABETH P., Asst. Prof. of Family Economics; Agr. Exp. Sta. (1979). BS 1973, PhD 1982, Baker Univ.; MA 1976, Univ. of Mo.

ELDRINGHOFF, SYLVAN, Instr. of Clothing, Textiles and Interior Design (1982). BS 1958, MA 1968, Univ. of Mo.

FILE, NANCY K., Instr. of Family and Child Development (1984). BS 1978, Univ. of Pittsburg; MS 1983, Purdue Univ.

FREUND, PATRICIA, Instr. of Dietetics, Restaurant, and Institutional Management (1980). BS 1969, Clarke Col.; MA 1976, Univ. of Neb.

FRIESEN, JUDITH A., Adjunct Instr. of Dietetics, Restaurant and Institutional Management (1983). MS 1981, Wichita St. Univ.

FRYER, E. BETH, Prof. of Foods and Nutrition; Agr. Exp. Sta. (1959). BS 1945, Univ. of N.M.; MS 1949, Ohio St. Univ.; PhD 1959, Mich. St. Univ. (GF)

GILROY, MARILYN, Adjunct Instr. of Dietetics, Restaurant and Institutional Management (1981). BS 1962, Col. of St. Francis; MS 1966, St. Louis Univ.

GREIG, BETTIE, Adjunct Instr. of Dietetics, Restaurant and Institutional Management (1981). BSHE 1948, BSE 1949, Univ. of Ark.; MS 1968, Kan. St. Univ.

GREGOIRE, MARY, Instr. of Dietetics, Restaurant and Institutional Management (1983). MS 1975, N.D. St. Univ.

GRUNEWALD, KATHARINE K., Asst. Prof. of Foods and Nutrition; Agr. Exp. Sta. (1979). BS 1974, Univ. of Wis.; MS 1976, PhD 1979, Univ. of Ky. (GF)

HALL, JUDITH A., Instr. of Dietetics, Restaurant and Institutional Management (1980). MS 1973, Kan. St. Univ.

HANNA, SHERMAN, Prof. and Acting Head, Family Economics; Agr. Exp. Sta. (1977). BS 1968, Mass. Inst. of Tech.; MS 1973, PhD 1974, Cornell Univ. (GF)

HARBERS, CAROLE ANN ZIMMERMAN, Asst. Prof. of Foods and Nutrition; Agr. Exp. Sta. (1979). BS 1969, Ohio Univ.; MS 1976, Va. Poly. & St. Univ.; PhD 1979, Kan. St. Univ. (GF)

HARPER, NANCY, Instr. of Clothing, Textiles and Interior Design (1981). BS 1973, MS 1976, Calif. Polytechnic St. Univ.

HARRISON, DOROTHY LUCILE, Prof. of Foods and Nutrition Emerita; Agr. Exp. Sta. (1947). BS 1938, Dakota Wesleyan Univ.; MS 1943, PhD 1947, Iowa St. Univ. (GF)

HELVENSTON, SALLY, Instr. of Clothing, Textiles and Interior Design (1975). BME 1970, MS 1975, Fla. St. Univ.

HERRING, NANCY S., Adjunct Instr. of Dietetics, Restaurant and Institutional Management (1983). MS 1974, Purdue Univ.

HILL, J. LEE, Instr. of Clothing, Textiles and Interior Design (1983). MS 1980, Tex. Women's Univ.

HILL, OPAL BROWN, Assoc. Prof. of Clothing, Textiles and Interior Design Emerita (1944) BS 1944, MS 1950, Kan. St. Univ. (GF)

HOEFLIN, RUTH, Former Dean and Prof. of Home Economics; Agr. Exp. Sta. (1957). BS 1940, Iowa St. Univ.; MA 1945, Univ. of Mich.; PhD 1950, Ohio St. Univ. (GF)

HOLCOMB, CAROL, Asst. Prof. of Family and Child Development (1979). AB 1966, Mercer Univ.; MA 1975, PhD 1977, Ore. St. Univ. (GF)

HOLDEN, DAVID, Adjunct Asst. Prof. of Dietetics, Restaurant and Institutional Management (1982). BS 1959, Tufts Univ.; MD 1963, Yale Univ.

HOOVER, LU ANN, Instr. of Family and Child Development (1978). BS 1974, MS 1978, Kan. St. Univ.

HOWE, HAZEL DELL, Assoc. Prof. of Clothing and Textiles Emerita (1936). BS 1921, MS 1935, Kan. St. Univ. (GF)

HUCK, JANICE, Instr. of Clothing, Textiles and Interior Design (1981). BS 1969, MS 1975, Colo. St. Univ.

HUNTER, ANN P., Adjunct Instr. of Dietetics, Restaurant and Institutional Management (1983). MS 1955, Iowa St. Univ.

HUYCK, ELNORA T., Assoc. Dean and Prof. of Home Economics; Agr. Exp. Sta. (1977). BS 1940, MS 1958, Kan. St. Univ.; PhD 1971 Univ. of Minn. (GF)

INGALSBE, NOALEEN G., Adjunct Instr. of Dietetics, Restaurant and Institutional Management (1983). MS 1976, Kan. St. Univ.

JOHNSON, MARLENE, Instr. of Clothing, Textiles and Interior Design (1980). BS 1974, MS 1980, Univ. of Wis.-Stout.

JONES, STEPHAN A., Adjunct Instr. of Family and Child Development (1982). BS 1960, Univ. of Utah, MSW 1963, Brigham Young Univ.

JURICH, ANTHONY P., Prof. of Family and Child Development; Agr. Exp. Sta. (1972). BS 1969, Fordham Univ.; MS 1971, PhD 1972, Pa. St. Univ. (GF)

KELL, LEONE BOWER, Prof. of Family and Child Development Emerita; Agr. Exp. Sta. (1927). BS 1923, MS 1928, Kan. St. Univ. (GF)

KENNEDY, CARROLL E., Prof. of Family and Child Development; Agr. Exp. Sta. (1970). AB 1949, Wheaton Col.; MS 1953, Kan. St. Univ.; EdD 1963, Univ. of Md. (GF)

KNOPP, NANCY M., Instr.; Alumni Relations (1983). MS 1982, Kan. St. Univ.

LARSON, SUSAN S., Asst. Prof. of Family and Child Development Emerita (1955). BS 1940, Univ. of Iowa; MS 1942, Univ. of Wis.

LIENKAEMPER, GERTRUDE ELISE, Assoc. Prof. of Clothing and Textiles Emerita (1941). BS 1921, Ore. St. Col.; MS 1938, Univ. of Wash. (GF)

LIES, MARIE, Adjunct Instr. of Dietetics, Restaurant and Institutional Management (1975). BA 1943, Marymount Col.

LINDAMOOD, SUZANNE, Assoc. Prof., Family Economics (1977). BS 1968, Carnegie-Mellon Univ.; MA 1970, PhD 1974, Cornell Univ. (GF)

LONG, IVALEE McCORD, Prof. of Family and Child Development Emerita (1957). BS 1933, MS 1951, Kan. St. Univ.; PhD 1964, Purdue Univ. (GF)

LOOKHART, GEORGE, Adjunct Prof. of Foods and Nutrition (1982). BS 1968, Kearney St. Col.; PhD 1973, Univ. of Wyo.

MANNING, ROBERT T., Adjunct Asst. Prof. of Dietetics, Restaurant and Institutional Management (1983). MD 1954, Univ. of Kan. Medical Center.

McCULLOUGH, ELIZABETH, Assoc. Prof. of Clothing, Textiles and Interior Design (1978). BS 1974, Ohio St. Univ.; MS 1975, PhD 1978, Univ. of Tenn. (GF)

McNEIL, JOAN N., Asst. Prof. of Family and Child Development (1970). BS 1951, Kan. St. Univ.; MS 1956, Univ. of Minn.; PhD 1980, Kan. St. Univ. (GF)

MILLER, DAVID, Adjunct Asst. Prof. of Dietetics, Restaurant and Institutional Management (1982). BA 1973, MD 1977, Univ. of Mo.

MORSE, RICHARD L.D., Prof., Department of Family Economics (1955). BA 1938, Univ. of Wis.; PhD 1942, Iowa St. Univ. (GF)

MOSIER, STANLEY J., Adjunct Asst. Prof. of Dietetics (1975). AB 1964, Kan. St. Univ.; MD 1968, Univ. of Kan.

MULLEN, IVA MANILLA, Asst. Prof. of Foods and Nutrition Emerita (1936). BS 1925, Kan. St. Univ.; MS 1928, Iowa St. Univ. (GF)

MUNSON, DEANNA M., Asst. Prof. of Clothing, Textiles and Interior Design (1967). BS 1966, MS 1967, PhD 1980, Kan. St. Univ. (GF)

NEWBY, FRANCES ANN, Asst. Prof. of Clothing, Textiles and Interior Design (1963). BFA 1961, Kan. City Art Inst.; MArch 1970, Kan. St. Univ.

NEWELL, KATHLEEN, Assoc. Prof. of Foods and Nutrition; Agr. Exp. Sta. (1962). BS 1944, Kan. St. Univ.; MS 1951, Univ. of Wis.; PhD 1973, Univ. of Tenn. (GF)

PARTLOW, CHARLIE, Instr. of Dietetics, Restaurant and Institutional Management (1981). BS 1979, Miss. St. Univ., MS 1980, Univ. of Southern Miss.

PENCE, KAREN T., Instr. of Home Economics (1977). BSE 1971, Emporia St. Univ.; MS 1972, Kan. St. Univ.

PETERSON, MARY DON, Assoc. Prof. and Head of Clothing, Textiles and Interior Design (1968). BS 1958, MS 1959, Univ. of Tenn.; EdD 1975, Okla. St. Univ. (GF)

PORESKY, ROBERT H., Assoc. Prof. of Family and Child Development; Agr. Exp. Sta. (1972). AB 1963, MS 1967, PhD 1969, Cornell Univ. (GF)

RANHOTRA, GURBACHAN, Adjunct Prof. of Foods and Nutrition (1977). BVS 1958, MS 1960, Agra Univ.-India; PhD 1964, Univ. of Minn. (GF)

RASMUSSEN, ALBIE C., Asst. Prof. of Family Economics (1966). BS 1962, Univ. of Alaska; MS 1964, Kan. St. Univ.

REAGAN, BARBARA, Assoc. Prof. of Clothing, Textiles and Interior Design; Agr. Exp. Sta. (1976). BS 1968, Syracuse Univ.; MS 1972, PhD 1976, Purdue Univ. (GF)

REEVES, ROBERT D., Assoc. Prof., Foods and Nutrition; Agr. Exp. Sta. (1977). BA 1964, MS 1965, Tex. Tech. Univ.; PhD 1971, Iowa St. Univ. (GF)

REKERS, GEORGE A., Prof., Family and Child Development (1980). AB 1970, Westmont Col.; MA 1971, CPhil 1972, PhD 1972, Univ. of Calif.-Los Angeles. (GF)

ROACH, FAITH RUSSELL, Assoc. Prof. of Dietetics, Restaurant and Institutional Management (1965). BS 1947, MS 1966, PhD 1973, Kan. St. Univ. (GF)

ROLLINS, JUDY C., Assoc. Prof. and Head, Family and Child Development (1979). BS 1959, Univ. of Ky.; MS 1975, Purdue Univ.; PhD 1979, Univ. of Tenn. (GF)

RO-TROCK, LAURENCE G., Adjunct Asst. Prof. of Family and Child Development (1984). PhD 1978, Univ. of Mo.-KC.

ROOS, MAUREEN E., Adjunct Asst. Prof. of Dietetics, Restaurant and Institutional Management (1983). MD 1978, Univ. of Kan.

RUSSELL, CANDYCE S., Assoc. Prof. of Family and Child Development; Agr. Exp. Sta. (1974). BS 1968, Cornell Univ.; MA 1972, PhD 1975, Univ. of Minn. (GF)

SCHEIDT, RICK JAMES, Assoc. Prof. of Family and Child Development (1976). BA 1967, MA 1969, Calif. St. Univ.; PhD 1973, Univ. of Neb. (GF)

SCHUMM, WALTER R., Assoc. Prof. of Family and Child Development; Agr. Exp. Sta. (1979). BS 1972, The Col. of Wm. and Mary; MS 1976, Kan. St. Univ.; PhD 1979, Purdue Univ. (GF)

SEGO, R. JEAN, Asst. to Dean; Instr. of Home Economics (1967). BA 1960, Friends Univ.; MS 1967, Kan. St. Univ.

SETSER, CAROL S., Assoc. Prof. of Foods and Nutrition; Agr. Exp. Sta. (1976). BS 1962, Univ. of Mo.; MS 1964, Cornell Univ.; PhD 1971, Kan. St. Univ. (GF)

SHOULBERG, DONALD J., Adjunct Asst. Prof. of Family and Child Development (1983). PhD 1975, Univ. of Kan.

SHUGART, GRACE SEVERANCE, Prof. of Dietetics, Restaurant and Institutional Management Emerita; Agr. Exp. Sta. (1951). BS 1931, Wash. St. Univ.; MS 1938, Iowa St. Univ. (GF)

SIMONIS, PATRICIA L., Instr. of Dietetics, Restaurant and Institutional Management (1983). MS 1980, Kan. St. Univ.

SMITH, MEREDITH, Asst. Prof. of Foods and Nutrition, Agr. Exp. Sta. (1981). BS 1970, Trinity Univ.; PhD 1978, Va. Polytechnic Inst. and St. Univ. (GF)

SPEARS, MARIAN C., Prof. and Head, Dietetics, Restaurant and Institutional Management; Agr. Exp. Sta. (1975). BS 1942, MS 1947, Western Reserve Univ.; PhD 1971, Univ. of Mo. (GF)

STEVENSON, BARTA M., Instr. of Clothing, Textiles and Interior Design (1983). MS 1976, Utah St. Univ.

STITH, MARJORIE MAY, Prof. of Family and Child Development (1961). BS 1943, Ala. St. Col. for Women; MS 1958, PhD 1961, Fla. St. Univ. (GF)

STONE, MARTHA B., Asst. Prof., Foods and Nutrition; Agr. Exp. Sta. (1977). BS 1974, MS 1975, PhD 1977, Univ. of Tenn. (GF)

STOWE, BARBARA S., Prof. and Dean (1983). BS 1954, Univ. of Neb.; MA 1957, Mich. St. Univ.; PhD 1973, Univ. of N.C. Greensboro and N.C. St. Univ.

SWIHART, JUDSON, Instr. of Family and Child Development (1981). BS 1965, Univ. of Ariz.; MSW 1967, Calif. St. Univ. - San Diego.

TINKLIN, GWENDOLYN LaVERNE, Prof. of Foods and Nutrition Emerita; Agr. Exp. Sta. (1943). BS 1940, MS 1944, Kan. St. Univ. (GF)

TONN, GERHART, Adjunct Asst. Prof. of Dietetics, Restaurant and Institutional Management (1981). BA 1939, MD 1944, Univ of Kan.

TRETBAR, HARVEY A., Adjunct Asst. Prof. of Dietetics (1975). BA 1948, Westminister Col.; MD 1952, Univ. of Kan.

VADEN, ALLENE G., Prof. of Dietetics, Restaurant and Institutional Management; Agr. Exp. Sta. (1971). BS 1960, Univ. of Tex.; MS 1967, Tex. Technological Col.; PhD 1973, Kan. St. Univ. (GF)

VILLASI, LUDWIG, Asst. Prof. of Clothing, Textiles and Interior Design (1975). BS 1968, MS 1975, Wayne St. Univ. (GF)

VIN ZANT, WHITNEY L., Adjunct Asst. Prof. of Dietetics, Restaurant and Institutional Management (1983). MD 1971, Univ. of Kan.

VORHEES, VICTOR, Adjunct Asst. Prof. of Dietetics (1975). BS 1957, McPherson Col.; MS 1961, Univ. of Okla.; MD 1968, Univ. of Kan.

WANSKA, SUSAN K., Asst. Prof. of Family and Child Development (1978). PhD 1977, Univ. of Wis.

WEST, BESSIE BROOKS, Prof. of Dietetics, Restaurant and Institutional Management Emerita (1928). AB 1924, Univ. of Calif.; MS 1951, Mich. St. Normal Col. (GF)

WEST, LOUELLEN, Instr., Family and Child Development (1977). BS 1966, Harding Col.; MS 1968, Univ. of Ill.

ZAYAS, JOSEPH, Assoc. Prof. of Foods and Nutrition; Agr. Exp. Sta. (1983). MS 1956, PhD 1962, DSc 1970, Tech. Inst. (Moscow).

Home Economics

Barbara S. Stowe, dean
Elnora Huyck,* associate dean
Jean Sego, assistant to the dean
Karen Pence, instructor

119 Justin Hall
532-5500

Study in the College of Home Economics prepares professionals who are concerned with the impact of rapid technological change on human development and well being. Programs of study address the design and management of environments and services which will enhance human productivity and quality of life.

Professional objectives are met through specialized study in one of the five departments of the college or through broader based programs in preparation for professions in cooperative extension, home economics education, or mass communications.

The bachelor of science degree is offered in each area of specialization and in general home economics. The master of science degree is offered by each department. Two doctoral programs leading to the Ph.D. are also available.

The College of Home Economics offers several services which enhance professional study. These include field study (see departmental options), participation in professional organizations and activities, and placement. The college operates the Family Center which provides interdisciplinary studies for graduate and undergraduate students as well as educational outreach programs for the families of Kansas.

All programs of study are accredited by the appropriate professional agencies.

Degree programs

All undergraduate programs of study lead to a bachelor of science degree. These programs are designed to interest students with varying academic and professional objectives. Students may select from a wide choice of options. The programs are listed in the chart and described on the following pages.

Entering students who are undecided about a specific major may enroll in general home economics. Students in this area may take courses from all fields of general education and home economics. The program allows time for students to consider the many possibilities available before they make the final decision of a college major. Special advisors work with these students to select courses that will later apply to almost any curriculum at Kansas State University.

Programs/majors	Degrees	Departments/areas
Apparel design	Bachelor of Science in Clothing and Textiles	Clothing, textiles, and interior design
Consumer affairs	Bachelor of Science in Consumer and Family Economics	Family economics
Dietetics Coordinated undergraduate program in dietetics General dietetics Administrative dietetics	Bachelor of Science in Dietetics	Dietetics, restaurant and institutional management
Early childhood education	Bachelor of Science in Family and Child Development	Family and child development
Family life and human development Community services Individual and family development	Bachelor of Science in Family and Child Development	Family and child development
Fashion marketing	Bachelor of Science in Clothing and Textiles	Clothing, textiles, and interior design
Foods and nutrition business—community service Business-communication Community nutrition	Bachelor of Science in Foods and Nutrition	Foods and nutrition
Foods and nutrition science	Bachelor of Science in Foods and Nutrition	Foods and nutrition
Food science and industry	Bachelor of Science in Food Science and Industry	Foods and nutrition and the College of Agriculture
General home economics	Bachelor of Science in Home Economics	General home economics
Health	Bachelor of Science in Health	Family and child development
Home economics and mass communications	Bachelor of Science in Home Economics and Mass Communications	General home economics
Home economics with liberal arts	Bachelor of Science in Home Economics	General home economics
Home economics extension	Bachelor of Science in Home Economics	General home economics
Housing and equipment	Bachelor of Science in Consumer and Family Economics	Family economics
Interior design	Bachelor of Science in Interior Design	Clothing, textiles, and interior design
Nutritional sciences (Pre-medical, pre-dental, and medically related fields)	Bachelor of Science in Foods and Nutrition	Foods and nutrition
Restaurant management	Bachelor of Science in Restaurant Management	Dietetics, restaurant and institutional management
Textile chemistry	Bachelor of Science in Textile Chemistry	Clothing, textiles, and interior design, and chemistry
Textile science	Bachelor of Science in Clothing and Textiles	Clothing, textiles, and interior design
Vocational home economics education	Bachelor of Science in Vocational Home Economics Education	General home economics

General Requirements

Bachelor of science degree requirements

The College of Home Economics is undergoing extensive curriculum revisions that will be effective fall 1984. Students entering 1984-85 may wish to obtain information and choose between current or revised curricula. Contact dean's office faculty during registration for more information.

Each degree offered by the College of Home Economics includes a minimum of 34 hours in liberal-general education; professional, supporting, and/or core courses as specific option requires and including a minimum of 33 hours in home economics courses (except food science and industry); one hour PE 101, Concepts in Physical Education; and unrestricted electives as needed to total at least 125 hours.*

The curricula consist of the following: a broad general education that includes courses from the humanities, social, biological, and physical sciences; a home economics core that is a small group of home economics courses planned to introduce students to various aspects of the total profession;** an area of specialization, to give the student the opportunity to develop knowledge and skills in a specific field of home economics; and unrestricted electives that permit students to take courses of their choice in any KSU department.

Basic curriculum requirements are listed below. See specific options for details.

Liberal-general education courses (34 hours minimum)

Communications		8-9
ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
	or	
SPCH 106	Oral Communication IA	3
Social science		6
ECON 110	Economics I	3
PSYCH 110	General Psychology	3

Additional requirements (20-53 hours)
Four disciplines of humanities, social, biological, and physical sciences shall be represented in liberal-general education and/or supporting courses. (One discipline, not represented in supporting courses, shall include 8-12 credit hours, with two courses in sequence, plus one additional course.)
(see specific option)

Home economics core (14-15 hours)**

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 132	Basic Nutrition	3
	or	
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Professional and supporting courses (34-65 hours)
(see specific option)

Unrestricted electives (0-25 hours)
(see specific option)

Other

Concepts in Physical Education	1
Total hours for graduation	**125***

*Food science and industry and the undergraduate coordinated program in dietetics require 127 hours.
**Coordinated undergraduate program in dietetics, food science and industry, health, nutritional sciences, textile chemistry, and vocational home economics education differ. See specific program requirements.

Transfer programs

Careful planning enables a student to transfer college courses which will apply toward specific degree requirements. A student who plans to transfer for the junior year should write, or preferably come, to the KSU campus for a conference before beginning the college course work. The courses listed below may be transferred to the College of Home Economics, although not all courses are required for every major. A list of required courses for each major is available from the home economics dean's office.

Courses required in all home economics majors:	**Credit hours***
English composition	6
Speech (public speaking)	2
General psychology	3
Economics	3

Transferable courses; some may apply as electives if not required for specific major:

American government or political science	3-6
Sociology	3-6
Civilization or world history	3-6
Approved literature or modern language	6
Art appreciation	3
Design I	2
Drawing I	2
College algebra	3
General chemistry**	5
Organic chemistry	5
Biology (with lab)	4
Human growth and development (life span)	3
Food preparation and meal management	4-6
Nutrition***	3
Socio-economics of clothing	3
Clothing construction	3
Family relations****	3
Child development****	3
Textiles****	3

*Credit hours given above apply to courses at KSU. Some transfer courses have more or fewer hours; substitutions or adjustments usually can be made for the difference in credit hours. A maximum of 62 hours may be transferred from a two-year college; a minimum of 125 hours is required for graduation from the KSU College of Home Economics.

**Many home economics majors do not specifically require chemistry to fulfill the physical science requirement. Write for a list of required courses for major area of interest.

***Students planning to major in foods and nutrition, dietetics, home economics education, or extension should take FN 502, Principles of Nutrition, after transferring to KSU.

****Must be offered through home economics department for students majoring in vocational home economics education.

Program Options

Honors programs

Undergraduate. Students with outstanding academic records are invited to participate in the home economics honors program. High school students are selected according to their scores on the American College Test. Transfer and upperclass students with a 3.5 cumulative grade point average also are eligible. Advisors help honor students plan their individual programs of study which include honors courses, seminars, and independent study.

Advanced degree. The home economics advanced degree program is for outstanding students with demonstrated ability for graduate work. Advisors are available to counsel with students about the value of advanced degree work in their areas of specialization. Graduate faculty members are available to help students plan educational experiences that can lead to a graduate program in the area of the student's choice.

Dual degree programs

Kansas State University. Some students may choose to enhance their versatility in the job market by combining related programs. They are encouraged to explore the possibilities for dual degrees within and outside the College of Home Economics. Many combinations are possible for dual degrees under the University policy of a minimum of 150 hours and completion of requirements for both degrees. Questions should be directed to the dean's office.

The College of Home Economics participates in the intercollegiate programs in Women's Studies and Gerontology, covered earlier in this catalog.

Kansas independent colleges. The College of Home Economics cooperates with Kansas independent colleges in a unique program which allows students to prepare for home economics-related professions in the United States and abroad. A student entering the program will complete the first two or two and one-half years at a cooperating independent college and a minimum of two semesters of intensive home economics study at Kansas State University. The student will then return to the independent college for the final semester. The student completing this program, will receive a B.A. degree in liberal arts from the independent college and a B.S. degree in home economics from Kansas State University.

Graduate study

Excellent opportunities for graduate study are available for the student who wishes to continue beyond the bachelor of science degree. All departments in the College of Home Economics, as well as general home economics and home economics education, offer the master of science degree. Two doctoral degree programs are available: the Ph.D. in foods and nutrition; and the Ph.D. in home economics, an interdepartmental degree with areas of emphasis in apparel, textiles and interior design, in family and child development, in family economics, or in institutional management.

Graduate research and teaching assistantships are available to qualified students. Application forms and additional information can be obtained from the dean, College of Home Economics, Justin Hall, Manhattan, Kansas 66506.

Placement

The College of Home Economics cooperates with the Career Planning and Placement Center to help students locate employment opportunities in their fields of study. The employment rate is high for graduates who have flexibility in geographic location. An advanced degree in home economics expands career opportunities. Salary levels for those with advanced degrees are commensurate with prior experience.

Field study opportunities

Each department in the College of Home Economics offers field study experience for interested and qualified students. They earn University credit and gain valuable on-the-job experience in a variety of locations. Guidance and supervision for these programs come from University faculty in cooperation with professionals in the field. The length of time devoted to a field study experience may vary from one or two weeks to a complete semester. Some programs provide students with minimal salary while completing field experiences (see departmental options.)

Organizations and activities

Students participate in a wide range of professional activities sponsored by local and national organizations. Most subject matter areas within the college have a student organization to assist in the exploration of the areas and enrichment of the members. Professional sections funded by the Home Economics College Council are:

American Society of Interior Designers, Student Chapter
Clothing and Retailing
Family Economics
Family and Child Development
Foods and Nutrition
Home Economics Education
Home Economics Extension
KSU Restaurant Management Club
KSU Student Chapter of the American Association of Textile Chemists and Colorists
Student Dietetic Association

Undergraduate students may be elected or appointed to serve as members of the Home Economics College Council, the official home economics student governing body. All students may participate in the College of Home Economics Open House, which is held as a part of All-University Open House.

The Kansas State Student Member Section of the American Home Economics Association, available to all students in the College of Home Economics, encourages leadership and professional development.

Qualified students are invited to join the home economics honor societies, Phi Upsilon Omicron and Omicron Nu.

The Family Center

Stephan Bollman, director

The Family Center is designed to provide applied educational experiences for graduate and undergraduate students of the College of Home Economics while offering educational outreach programs for the families of Kansas.

The center provides an interdisciplinary focus with support from all departments within the college and offers educational

programs and consultation for individuals and families. These services are provided by students who are supervised by College of Home Economics faculty. Specific programs are offered in: marriage and family therapy, family life education, parent education, family financial counseling, and nutritional education and consultation.

Located north of Justin Hall in Ellen Richards Lodge, the center is easily available to the students, faculty, and community.

Clothing, Textiles, and Interior Design

Mary Don Peterson, head of department

Associate Professors Bresee,* McCullough,* Peterson,* and Reagan;* Assistant Professors Cordy, Munson,* Newby, and Villasi;* Instructors Ahmadi, Cannon, Eldringhoff, Hill, Huck, and Johnson; Emeriti: Professors Barfoot* and Brockman;* Associate Professors Cormany,* Hill,* Howe,* and Lienkaemper;* Assistant Professor Craigie.*

The Department of Clothing, Textiles, and Interior Design offers opportunities for study in socio-economics of clothing, textile science, clothing construction, fashion marketing, history of costume, and design of interiors.

Undergraduate study

Programs leading to a bachelor of science degree are: apparel design, fashion marketing, interior design, textile science, and textile chemistry. Students majoring in fashion marketing and interior design are encouraged to participate in the field experiences offered as options in those programs.

Facilities include an extensive University library, well-equipped studios, laboratories, and equipment for interior design, clothing construction, and textile analysis. The department has two student chapters of professional organizations, the ASID and AATCC.

Graduate study

The department offers advanced work leading to a master of science degree. Programs of study are individually planned for the students and are aimed at developing skills and concepts which will promote professional and personal advancement.

The Department of Clothing, Textiles, and Interior Design participates in the graduate program for the Ph.D. in home economics.

Apparel design

Bachelor of Science in Clothing and Textiles

The apparel design option initiates students in the basic skills and knowledge required in custom designing, apparel design, fashion illustration, and pattern drafting. Students take courses in the areas of clothing construction and design, art, pattern development, textiles, and costume history. An extensive historic textile and costume collection is available for study.

Liberal-general education courses (36-37 hours)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
ECON 110	Economics I	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3
ART 195	Survey of Art History I	3
ART 196	Survey of Art History II	3
CHM 110	General Chemistry	5
	or	
PHYS 101	The Physical World I	3
PHYS 103	The Physical World I Lab	1
HIST 102	Western Civilization: The Modern Era	3
MATH 100	College Algebra	3
	Biological science	3

Home economics core (14-15 hours)

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 132	Basic Nutrition	3
	or	
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Professional and supporting courses

CT 150	Principles of Clothing Construction	3
CT 220	Fundamentals of Apparel Design	3
CT 260	Textiles	3
CT 300	Advanced Clothing Construction	3
CT 315	Fashion Drawing & Illustration	3
CT 400	Tailoring	3
CT 410	Theory of Pattern Design I	3
CT 420	Design by Draping	3
CT 500	Intermediate Apparel Design	3
CT 515	Theory of Pattern Design II	3
CT 545	Textile & Apparel Industry	3
CT 540	Advanced Apparel Design	3
CT 630	History of Costume to 1780	3
CT 631	History of Costume from 1780 to Present	3
ID 740	Historic Fabric Design	3
ART 100	Design I	2
ART 190	Drawing I	2
ART 200	Design II	2
ART 210	Drawing II	2
ART 225	Figure Drawing I	2
ART 610	Figure Drawing II	3
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 206	BASIC Language Lab	2

Two courses to be selected from the following:

MANGT 202	Small Business Operations	3
MANGT 420	Management Concepts	3
MANGT 530	Industrial & Labor Relations	3
MANGT 531	Personnel & Wage Administration	3
MANGT 630	Labor Relations Law	3
MANGT 631	Collective Bargaining	2
MANGT 690	International Management	3
CT 230	Fashion Marketing	3

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (4-6 hours)

Total for graduation 125

Fashion marketing

Bachelor of Science in Clothing and Textiles

Study in fashion marketing includes retail management and sales promotion at industry and retail levels. A highlight of the junior or senior year is the fashion marketing field experience, in which students work for 5 to 6 weeks in a department or specialty store under supervision of the retailer and the University.

Liberal-general education courses (37-41 hours)		
ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
PSYCH 110	General Psychology	3
ECON 110	Economics I	3
ECON 120	Economics II	3
SOCIO 211	Introduction to Sociology	3
HIST 102	Western Civilization: The Modern Era	3
	Biological science	3-4
MATH 100	College Algebra	3
CHM 110	General Chemistry	5
Economics or statistics		**3-6 hours**
ECON 520	Intermediate Microeconomics	3
	or	
STAT 350	Business & Economic Statistics I	3
STAT 351	Business & Economic Statistics II	3
Home economics core (14-15 hours)		
GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 132	Basic Nutrition	3
	or	
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1
Professional and supporting courses		
ART 100	Design I	2
ACCTG 211	Financial Accounting	3
MANGT 420	Management Concepts	3
MKTG 400	Marketing	3
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 206	BASIC Language Lab	2
MANGT 531	Personnel & Wage Administration	3
	or	
PSYCH 560	Industrial Psychology	3
MKTG 542	Sales Management	3
	or	
JMC 320	Principles of Advertising	3
	or	
JMC 515	Public Relations	3
MKTG 450	Consumer Behavior	3
	or	
PSYCH 545	Consumer Psychology	3
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
CT	Clothing or textile elective,* 300 level or above	3
CT 150	Principles of Clothing Construction	3
ID 240	Interior Design Studio I	3
	or	
CT 220	Fundamentals of Apparel Design	3
CT 230	Fashion Marketing	3
CT 260	Textiles	3
CT 395	Visual Merchandising	3
CT 430	Orientation to Field Experience	1
	and	
CT 450	Fashion Marketing Field Experience	5
	or	
MKTG 541	Retailing	3
	and	
MKTG	Marketing electives, 400 level or above	3
CT 536	Fashion Merchandising	4
CT 545	Textile & Apparel Industry	3
CT 570	Textiles for Merchandising	3
CT 631	History of Costume from 1780 to Present	3
Physical education		
PE 101	Concepts in Physical Education	1
Unrestricted electives (7-12 hours)		
Total for graduation		125

*If either CT 131 or CT 440 was taken in the core.

Interior design

Bachelor of Science in Interior Design

The course of study includes residential interior design, design consulting, specialized merchandising, and extension.

Students participate in a series of studio exercises and lecture courses. Practical insights into the profession are gained through an interior design field experience. These may be done in locations where students can gain business and customer experiences in the design and merchandising of interiors and furnishings.

Liberal-general education courses (34 hours minimum)		
ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communiction I	2
ECON 110	Economics I	3
PSYCH 110	General Psychology	3
ART 195	Survey of Art History I	3
ART 196	Survey of Art History II	3
HIST 101	Western Civilization: The Rise of Europe	3

Additional liberal-general education requirement, 11 hours; a minimum of 3 hours from each of the following: social science, biological science, and physical science.

Home economics core (14-15 hours)		
GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 132	Basic Nutrition	3
	or	

FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Professional and supporting courses

ARCH 301	Appreciation of Architecture	3
ART 100	Design I	2
ART 190	Drawing I	2
ART 200	Design II	2
CT 260	Textiles	3
ID 240	Interior Design Studio I	3
ID 260	Interior Design Graphics	3
ID 320	History of Interior Design I	3
ID 340	Interior Design Studio II	3
ID 360	History of Interior Design II	3
ID 435	Interior Design Systems	3
ID 440	Interior Design Studio III	3
ID 460	Interior Design Practices & Procedures	3
ID 540	Interior Design Studio IV	3
ID 640	Interior Design Studio V	3
ID 650	Contemporary Homes	3

Two courses to be selected from the following:

ART 230	Sculpture I	2
ART 260	Design in the Crafts	2
ART 265	Ceramics I	2
ART 270	Metalsmithing & Jewelry	2
ART 275	Weaving	2

Two courses to be selected from the following:

ART 205	Graphic Design Technique	2
ART 215	Design III	2
ART 220	Watercolor I	2
ART 245	Painting I	2
ART 565	Ceramics II	3
ART 620	Watercolor II	3
ART 645	Sculpture II	3

Two courses to be selected from the following:

ACCTG 211	Financial Accounting	3
FINAN 532	Real Estate	3
MANGT 390	Business Law I	3
MKTG 400	Marketing	3
MKTG 540	Consumer Behavior	3
MKTG 541	Retailing	3
JMC 515	Public Relations	3

Professional electives
Select 10-12 hours from courses listed below:

LAR 204	Landscape Architectural Delineation Technique	2
ID 600	Interior Design Field Experience	4
ID 740	Historic Fabric Design	3
ID 751	Design for Exceptional Needs	3
ID 760	Historic Preservation	3
ID 780	Interior Design Seminar	2
FEC 660	Kitchen & Utility Area Planning	3
CT 395	Visual Merchandising	3
HORT 325	Indoor Plants & Flowers	2
PDP 220	Theory of Environmental Design I	2
PDP 380	Visual Thinking	2
PDP 651	Preservation Principles & Methods	3
PLAN 630	Computer Application in Planning & Design	1-3

Physical Education

PE 101	Concepts in Physical Education	1

Unrestricted electives (3-4 hours)

Total for graduation 125

Textile chemistry

Bachelor of Science in Textile Chemistry

The textile chemistry curriculum is a joint program between the Department of Clothing, Textiles, and Interior Design, and the Department of Chemistry. Students working toward this major may enroll in either of these departments.

The program is built upon the course requirements for traditional chemistry majors and expands the career alternatives by providing students with a specialization in an applied field.

Liberal-general education courses (42-43 hours minimum)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
ECON 110	Economics I	3
PSYCH 110	General Psychology	3
	Additional social sciences	6

One course must be at the 500 level or higher or carry prerequisite in the same department in which it is offered. One course must be an approved course to satisfy the international overlay requirement.

MATH 200	Analytic Geometry & Calculus I	4
MATH 221	Analytic Geometry & Calculus II	4
	Biological science	3-4
	Humanities	11

Take 4 additional courses, 11 credit hours minimum (1 course in fine arts, 1 course in philosophy, 1 course in literary or rhetorical arts). Two courses in one foreign language may be substituted for the latter two requirements.

Professional and supporting courses

PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
	or	
PHYS 213	Engineering Physics I	5
PHYS 214	Engineering Physics II	5
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 210	FORTRAN	2
STAT 320	Elements of Statistics	3
FEC 605	Consumer & the Market	3
CT 440	Socio-Psychological Aspects of Clothing	3
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 271	Chemical Analysis	4
	or	
CHM 220	Chemical Principles I	5
CHM 250	Chemical Principles II	5
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry I Lab	2
CHM 550	Organic Chemistry II	3
CHM 551	Organic Chemistry II Lab	2
CHM 545	Chemical Separations	2
CHM 500	General Physical Chemistry	3
	or	
CHM 585	Physical Chemistry I	3
CT 260	Textiles	3
CT 545	Textile & Apparel Industry	3
CT 741	Polymer Science	3
CT 650	Textile Fibers	3
CT 743	Textile Yarns	3
CT 756	Physical Analysis of Textiles	3
CT 765	Chemical & Optical Analysis of Textiles	3
CT 653	Textile Dyeing & Printing	4
CT 747	Textile Finishes	3
CT 750	Experimental Textiles	3

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (0-5 hours)

Total for graduation 125

Textile science

Bachelor of Science in Clothing and Textiles

The textile science option is designed specifically for students interested in one of the many textile areas such as quality control, fiber and fabric development, and textile testing. The option also is designed for students interested in pursuing graduate degrees for teaching, research, and extension service.

Concentration is focused on courses which will prepare the student for rewarding careers in the textile industry.

Liberal-general education courses (34 hours)

Communications		8
ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
ECON 110	Economics I	3
PSYCH 110	General Psychology	3

Additional requirements (20 hours)

Four disciplines of humanities, social, biological, and physical sciences shall be represented in liberal-general education and/or supporting courses. (One discipline, not represented in supporting courses, shall include 8-12 credit hours, with two courses in sequence plus one additional course.)

Home economics core (14-15 hours)

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 132	Basic Nutrition	3
	or	
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Professional and supporting courses

CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Lab	2
	or	
CHM 190	Elementary Organic Chemistry	3
CHM 191	Elementary Organic Chemistry Lab	2
	or	
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry I Lab	2
CHM 271	Chemical Analysis	4
MATH 100	College Algebra	3
PHYS 115	Descriptive Physics	4
STAT 320	Elements of Statistics	3
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 201	FORTRAN Language Lab	2
CT 131	Clothing & Society*	3
	or	
CT 440	Socio-Psychological Aspects of Clothing*	3
CT 260	Textiles	3
CT 545	Textile & Apparel Industry	3
CT 742	Textile Fibers	3

Two courses to be selected from the following:

CT 746	Textile Dyeing & Printing	4
	or	
CT 747	Textile Finishes	3
	or	
CT 765	Chemical & Optical Analysis of Textiles	3
CT 750	Experimental Textiles	3
	or	
CHM 500	Descriptive Physical Chemistry	3
CT 756	Physical Analysis of Textiles	3
FEC 605	Consumers & the Market	3

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (16-22 hours)

Total for graduation 125

*If neither is taken in home economics core.

Courses in clothing and textiles
Undergraduate credit

CT 131. Clothing and Society. (3) I, II. Cultural, social, psychological, and economic aspects of clothing needs and practices of individuals and groups. Two hours lec. and one hour discussion. Pr.: Open only to freshmen and sophomores. CT-131-0-1303

CT 150. Principles of Clothing Construction. (3) I, II. Clothing selection; pattern alteration and fitting techniques; construction methods as applied to woven and knitted fabrics. Six hours lab a week. CT-150-1-1303

CT 220. Fundamentals of Apparel Design. (3) I, II. Application of the elements and principles of design to apparel design; introduction to the work of the apparel designer; basic fashion drawing and figure study. Six hours lab a week. Pr.: ART 100. CT-220-1-1303

CT 230. Fashion Marketing. (3) II. Overview of the processes involved in the marketing of fashion goods. CT-230-0-1303

CT 260. Textiles. (3) I, II, alternate S. Fundamentals of textiles as related to the problems of the consumer. Two hours rec. and two hours lab a week. Pr.: Sophomore standing. CT-260-1-1303

CT 300. Advanced Clothing Construction. (3) I, II. Advanced techniques and experimentation with diverse fabrics; construction of a couture garment; principles of constructing men's wear. Six hours lab a week. Pr.: CT 150 and CT 260 or conc. CT-300-1-1303

CT 315. Fashion Drawing and Illustration. (3) I. In-depth study of the fashion figure and fashion drawing; fundamental fashion layout; development and organization of a design portfolio. Six hours lab a week. Pr.: ART 610 or conc.; CT 220. CT-315-1-1303

CT 395. Visual Merchandising. (3) I, II. Basic principles and techniques of merchandising display; experience through cooperation with retail stores. Pr.: ART 100. CT-395-1-1303

CT 400. Tailoring. (3) II. Beginning tailoring techniques applied in the construction of a coat or suit based on a commercial pattern. Six hours lab a week. Pr.: CT 300. CT-400-1-1303

CT 410. Theory of Pattern Design I. (3) I, II. Introduction to basic principles and techniques used in the development, alteration, and styling of patterns through use of pattern drafting, and flat pattern design. Pr.: CT 150. CT-410-1-1303

CT 420. Design by Draping. (3) I. Principles and techniques of design by draping in muslin and fashion fabric. Six hours lab a week. Pr.: CT 300 and CT 410. CT-420-1-1303

CT 430. Orientation to Field Experience. (1) II. Preparation for six week fashion marketing field experience. Exploration of the relationship between career goals and field experience. Interviewing for field experience placement. Pr.: CT 230 or conc. enrollment; major in CT option. CT-430-0-1303

CT 435. Fashion Promotion. (3) II. Promotion of fashion merchandise including advertising, display, special events, and public relations. Pr.: CT 230, 395, and JMC 320 or JMC 515. CT-435-0-1303

CT 440. Socio-Psychological Aspects of Clothing. (3) I, II. An interdisciplinary approach to the concepts and theories applied to the study of clothing and its expression and use in relation to self, society, and culture. Pr.: Six hours of social science. Not open to freshmen, sophomores, or students who have taken CT 131. CT-440-0-1303

CT 450. Fashion Marketing Field Experience. (5) I. Supervised work experience in a retail establishment. Pr.: CT 230, CT 430, and ACCTG 211, junior or senior in CT option, 2.0 cumulative GPA, 2.0 GPA in professional courses. CT-450-2-1303

CT 485. Problems in Apparel Design. (Var.) I, II, S. Independent study. Pr.: Consent of instructor. CT-485-3-1303

CT 499. Problems in Clothing and Textiles. (Var.) I, II, S. Independent study. Pr.: Consent of instructor. CT-499-3-1303

Undergraduate and graduate credit in minor field

CT 500. Intermediate Apparel Design. (3) I. Analysis of high fashion from origin of the haute couture to contemporary designers; use of inspirational sources for executing original design solutions. Six hours lab a week. Pr.: ART 200, CT 315, CT 420, and CT 515. CT-500-1-1303

CT 515. Theory of Pattern Design II. (3) II. Advanced techniques of pattern development; elementary application of pattern techniques to original designs; introduction to industrial uses of pattern design. Six hours lab a week. Pr. CT 410. CT-515-1-1303

CT 525. Pattern Drafting Techniques. (3) Alternate S. Study of advanced pattern drafting techniques with emphasis on the bodice and pants for different figure types. Six hours lab a week. Pr.: CT 410. CT-525-1-1303

CT 536. Fashion Merchandising. (4) I. Analysis of the elements, processes, and controls involved in fashion merchandising. Pr.: CT 230 and junior or senior standing. CT-536-0-1303

CT 540. Advanced Apparel Design. (3) II. Design orientation for market size range; stylization to industrial patterns; execution of original designs from sketch to finished garment; final presentation of design portfolio. Six hours lab a week. Pr.: CT 420 and CT 500. CT-540-1-1303

CT 545. Textile and Apparel Industry. (3) I. Analysis of fiber, textile, and apparel production; industry structure; impact of government regulations on production. Pr.: ECON 110. CT-545-0-1303

CT 570. Textiles for Merchandising. (3) I. Properties of fibers, yarns, fabrics, finishes, and dyes; emphasis on end-use performance of textiles. Pr.: CT 260. CT-570-1-1303

Undergraduate and graduate credit

CT 600. Textile Analysis. (3) Alternate S. Laboratory techniques used to characterize textile structures with emphasis on fiber, color, finish, care, and aging. Pr.: CT 260 and CHM 110. Not open to textile science majors. CT-600-1-1303

CT 630. History of Costume to 1780. (3) I, II. Interrelationship of costume and social, cultural, political, and economic environments from antiquity to 1780 with emphasis on evolution of garment design and sources of costume information. Pr.: ART 195 and ART 196 or HIST 101. CT-630-0-1303

CT 631. History of Costume from 1780 to Present. (3) I, II. Interrelationship of costume and social, cultural, political, and economic environments from 1780 to the present with emphasis on effects of the industrial revolution, dress reform movements, ready-to-wear development, and haute couture. Pr.: HIST 102. CT-631-0-1303

CT 710. Advanced Tailoring. (3) II, alternate S. Construction of a garment, using different fabrics and utilizing custom tailoring techniques. Pr.: CT 400 and 410 or 420. CT-710-1-1303

CT 715. Advanced Pattern Design. (3) I. Application of pattern design with emphasis on the development of patterns for original designs. Six hours lab a week. Can be repeated for credit. Pr.: CT 410. CT-715-1-1303

CT 741. Polymer Science. (3) I. In alternate years. Theory, application, and methods of structural analysis with emphasis on synthetic polymers. Pr.: CHM 350, and junior standing. CT-741-0-1303

CT 742. Textile Fibers. (3) I, alternate S. Indepth study of fibers. Two hours rec. and three hours lab a week. Pr.: CT 260 and CHM 191 or 351. CT-742-0-1303

CT 743. Textile Yarns. (3) I. In alternate years. Structure and performance of multifilament, spun, simple, and complex yarns. Pr.: CT 260, CHM 190 or 350, and junior standing. CT-743-0-1303

CT 746. Textile Dyeing and Printing. (4) II. Indepth study of color systems, colorimetry, physical and chemical properties of dyes, methods of dye-fiber association, and industrial dyeing and printing methods. Two hours lec. and four hours lab a week. Pr.: CT 742. CT-746-1-1301

CT 747. Textile Finishes. (3) II. Theory, application, evaluation, and identification of finishes and auxiliary products which are applied to textile fibers, yarns, and fabrics. Two hours lec. and three hours lab a week. Pr.: CT 742. CT-747-1-1303

CT 750. Experimental Textiles. (Var.) On sufficient demand. Individual investigation into textile research. Pr.: CT 742. CT-750-1-1303

CT 756. Physical Analysis of Textiles. (3) I. Theory and application of serviceability, wear, abrasion, shrinkage, porosity, and other physical components to fabric testing. One hour rec. and six hours lab a week. Pr.: CT 742. CT-756-1-1303

CT 760. Clothing and Textiles Seminar. (Var.) I, II. Discussion of current developments in the field. May be taken more than one semester with consent of student's advisory committee. Pr.: Eight hours credit basic to field involved. CT-760-0-1303

CT 765. Chemical and Optical Analysis of Textiles. (3) II. Application of organic chemistry and optical analysis to fibers, dyes, and finishes. One hour rec. and six hours lab. Pr.: CT 742, CHM 191 or 351. CT-765-1-1303

CT 770. Practicum in Clothing and Textiles. (Var.) I, II, S. Preplanned and supervised off-campus experience in business, industry, museums, government agencies, or the cooperative extension service. May be repeated up to six hours. Pr.: Twelve hours in clothing and textiles and consent of department head. CT-770-2-1303

CT 780. Problems in Clothing and Textiles. (Var.) I, II, S. Work is offered in apparel designing, textiles, history of costume, clothing economics. Pr.: Senior or graduate standing; consent of instructor. CT-780-3-1303

CT 785. Problems in Apparel Design. (Var.) I, II, S. Problems planned with the student to meet particular needs. Pr.: CT 500 or consent of instructor. CT-785-3-1303

Graduate credit

CT 831. Experimental Clothing Construction. (2-3) I, alternate S. Recent developments in clothing construction, utilizing experimental projects and innovative methods. Six hours lab a week. Pr.: Six hours of clothing and textiles. CT-831-1-1303

CT 835. Textile and Apparel Economics. (3) I. Analysis of the fiber, textile, and apparel industries. Issues in the production and distribution of textile products with emphasis on international trade and government involvement. Pr.: ECON 120, six hours in CT at 400 level or above. CT-835-0-1303

CT 840. Family Consumption of Textile Products. (3) II. Factors that affect family consumption of apparel, draperies, upholstery, floor coverings, wall coverings, and other textile products; changes in textile consumption patterns over the life cycle. Textile product characteristics, end-use performance, quality evaluation, and maintenance. Pr.: MKTG 540 or FEC 605. CT-840-0-1303

CT 845. Clothing and Human Behavior. (3) II. In alternate years. Influences of the psychological, cultural, and social aspects of clothing upon human behavior. Pr.: ANTH 200 and CT 131 or CT 440. CT-845-0-1303

CT 851. Clothing and Textile Literature. (2) II, alternate S. Review of current literature with implications for future research. Pr.: Eight hours of clothing and textiles and eight hours of physical science. CT-851-3-1303

CT 860. Contemporary Topics in Clothing and Textiles. (2-3) I, alternate S. Analysis of social and environmental factors related to clothing and textiles. May be taken more than one semester with consent of student's advisory committee. Pr.: Eight hours of credit basic to field. CT-860-0-1303

CT 898. Master's Report. (1 or 2) I, II, S. Written report to meet the requirements for the degree Master of Science. Subject chosen in consultation with major instructor. Pr.: Consent of department head. CT-898-4-1303

CT 899. Research in Clothing and Textiles. (Var.) I, II, S. Research in clothing or textiles which may form the basis for the master's thesis. Pr.: Consent of instructor. CT-899-4-1303

CT 999. Research in Clothing, Textiles, and Interior Design. (Var.) I, II, S. Pr.: Consent of major professor. CT-999-4-1303

Courses in interior design

Undergraduate credit

ID 101. Design for Contemporary Living. (3) I, II. Development of critical awareness of the application of principles of design in contemporary living. ID-101-0-1399

ID 240. Interior Design Studio I. (3) I, II. Aesthetic, social, and functional aspects of the home and its furnishings. Six hours studio a week. Pr.: ART 100. ID-240-1-1399

ID 260. Interior Design Graphics. (3) I, II. Development of graphic communication skills used by Interior Designers. Six hours studio a week. ID-260-1-1399

ID 320. History of Interior Design I. (3) I. A historic survey of furniture, textiles, and the minor arts from antiquity to 1850. Progressive development of design and ornamentation characteristics as related to interiors. Pr.: ART 195; ART 196 or conc. enrollment; HIST 101. ID-320-0-1399

ID 340. Interior Design Studio II. (3) I, II. Introduction to design process. Emphasis on space planning and selection of materials and furnishings within living environment. Six hours studio a week. Pr.: ART 190, ID 260, or equiv. and ID 240. ID-340-1-1399

ID 360. History of Interior Design II. (3) II. A survey of modern design evolution in furniture, textiles, and the minor arts from 1850 to the present. Concepts, development, and application of modern technology to contemporary design and interiors. Pr.: HIST 101. ID-360-0-1399

ID 435. Interior Design Systems. (3) I, II. Analysis of lighting, heating, ventilating, acoustics, and air conditioning systems in residential interior design; principles, performance requirements, and components related to aesthetic, functional, and behavioral interior planning; relationship among the systems, properties, methods, techniques, and materials in interior design. Pr.: ID 340 or conc. enrollment. ID-435-0-1399

ID 440. Interior Design Studio III. (3) I, II. Interior design problem solving in residential interiors. Graphic and verbal presentation of solutions. Six hours studio a week. Pr.: ID 340. ID-440-1-1399

ID 460. Interior Design Practices and Procedures. (3) II. Professional ethics and business practices; sources, materials, and construction methods used in home furnishings and residential interiors. Pr.: ID 340 or conc. enrollment. ID-460-0-1399

ID 499. Problems in Interior Design. (Var.) I, II, S. Independent study. Pr.: Consent of instructor. ID-499-3-1399

Undergraduate and graduate credit in minor field

ID 500. Intermediate Interior Design Studio. (3) S. Problem solving in design of living environments using graphic communication techniques. May substitute for Interior Design Studios ID 440, 1D 540, or ID 640. Students should plan to substitute this course for the next level studio in sequence. Pr.: ID 340. ID-500-1-1399

ID 540. Interior Design Studio IV. (3) I. Analysis, organization, and development of multi-functional interior spaces within living environments. Establishment of design priorities evolving from data gathering and problem solving techniques. Six hours studio a week. Pr.: ID 440; ID 650 or conc. enrollment. ID-540-1-1399

Undergraduate and graduate credit

ID 600. Interior Design Field Experience. (4). Supervised work experience. Pr.: Senior standing, 2.2 cumulative GPA and 2.5 GPA in professional area and consent of department head. ID-600-2-1399

ID 640. Interior Design Studio V. (3) II. A study of human needs encountered in the total design of residential interiors; field measurements, shop drawings, supportive business procedures. Six hours studio a week. Pr.: ID 440. ID-640-1-1399

ID 650. Contemporary Homes. (3) I. Residential interior living environments explored in an ecological, behavioral, and cultural context. Pr.: ID 340. ID-650-0-1399

ID 740. Historic Fabric Design. (3) I. Interrelationships of fabric design and social, cultural, political, economic, and geographical environments from prehistoric times to present. Pr.: HIST 501 or 101 and CT 260. ID-740-0-1399

ID 751. Designing for Exceptional Needs. (3) II. Problems encountered in designing interiors for children, handicapped, aged, and the confined. Pr.: ID 440. ID-751-0-1399

ID 760. Historic Preservation and Restoration of Interiors. (3) I. Principles, guidelines, and qualities of preservation and restoration of interiors. Research and application. Pr.: ID 320 and 360; or CT 630 and 631; or PDP 250 and 251. ID-760-0-1399

ID 780. Interior Design Seminar. (2-3) I, II, alternate S. Analysis of current developments in the field. May be taken more than one semester with a maximum of six credit hours. Pr.: Eight hours of credit basic to field and consent of instructor. ID-780-0-1399

ID 782. Problems in Interior Design. (Var.) I, II, S. Problems planned with the student to meet particular needs. Pr.: Consent of instructor. ID-782-3-1399

Graduate credit

ID 800. Interior Design Studio VI. (3) I, II, S. Advanced studio experiences in residential interior environments. May be repeated with a maximum of six hours applied toward a graduate degree. Pr.: ID 540 or 640 and 751 or conc. or 760 or conc. ID-800-1-1399

ID 820. Readings in Interior Design. (2) I, II, S. Directed study in current problems of interior design. Pr.: 1D 440 or consent of instructor. 1D-820-3-1399

ID 899. Research in Interior Design. (Var.) I, II. Research which may form the basis for the master's thesis. Pr.: Graduate standing. ID-899-4-1399

Dietetics, Restaurant and Institutional Management

Marian Spears,* head of department

Professors Spears* and Vaden;* Associate Professors Roach* and Canter;* Instructors Dana, Freund, Hall, and Partlow; Emeriti: Professor Shugart;* Associate Professors Riggs and Ziegler.*

The programs in the Department of Dietetics, Restaurant and Institutional Management are designed to prepare students in areas of dietetics, foodservice management, and restaurant management.

Undergraduate study

Instruction is offered in three distinct programs, each of which leads to a Bachelor of Science in Dietetics: coordinated undergraduate program in dietetics; general dietetics; and administrative dietetics. The Department of Dietetics, Restaurant and Institutional Management administers the curriculum in restaurant management that leads to the degree Bachelor of Science in Restaurant Management.

Coordinated undergraduate program in dietetics. Upon completion of the basic requirements, students may, at the beginning of the junior year, enter the coordinated undergraduate program in dietetics, which integrates classroom with clinical experiences, culminating in a Bachelor of Science in Dietetics and eligibility for active membership in The American Dietetic Association (ADA) and for registration as a dietitian (R.D.) upon passing a national qualifying examination. Junior and senior students obtain coordinated management experience in the residence halls and K-State Union foodservices on campus. In addition, senior students in the program acquire clinical experience for one semester in Wichita hospitals, coordinated by KSU faculty in the Wichita KSU Dietetic Center. This is a program in general dietetics and is accredited by the Commission on Accreditation of the ADA for the maximum 8-year period. Many students in dietetics elect a one-week hospital experience between the fall and spring semesters before entering the coordinated undergraduate program at the beginning of the junior year. Because of its professional connotation, the following criteria have been established for admission to and continuation in the program:

1. Transfer students must satisfy KSU admission requirements.

2. GPA of 2.2 on a 4.0 scale for the first two years with no grade below a C in any natural science course.

3. Provide health report and personal references with application which must be filed when the student enters the program.

4. Approval of the dietetics executive committee.

5. GPA of 2.5 with no grade below a C in professional courses.

General dietetics. Completion of this program, after the basic requirements, results in a Bachelor of Science in Dietetics and eligibility for affiliate membership in ADA. This program is an ADA approved Plan IV program in general dietetics. Active membership and/or eligibility to take the registration examination (R.D.) may be obtained by one of three methods, each individually approved by ADA: approved internship, master's degree, or an approved work experience.

Administrative Dietetics. This program meets ADA Plan IV requirements for foodservice management. It is designed particularly for the student interested in management of institutional foodservices such as those in colleges, schools, or health care facilities.

Graduate study

Graduate study toward the Master of Science in Institutional Management is offered. For admission to the program (or concurrent with graduate study), applicants must have completed the following prerequisite courses or equivalents: DRIM 440, Fundamentals of Quantity Food Production; MANGT 420, Management Concepts; and ACCTG 211, Financial Accounting.

Individual programs of study for the master of science degree are planned according to the background and interests of the student. Approximately two-thirds of the credits are from courses in the major field and one-third from supporting courses.

Students may choose one of the following plans: a minimum of 30 semester hours of graduate credit, including a master's thesis of six to eight semester hours based on original research; a minimum of 30 semester hours of graduate credit with a master's report of two hours; or 36 hours or more course work and a comprehensive written examination.

All programs of study must include a course in both statistics and research methods. Enrollment in the departmental graduate seminar is required during two semesters of graduate study. Eligibility for ADA membership and professional dietetic registration (R.D.) are possible by the master's degree route if appropriate academic and work experience requirements are met.

The Department of Dietetics, Restaurant and Institutional Management participates in the graduate program for the Ph.D. in Home Economics. A student may select an emphasis in institutional management.

Dietetics

Bachelor of Science in Dietetics

Three separate programs are available in this option. Program I is the coordinated undergraduate program in dietetics which combines classroom and clinical experience and leads to a B.S. degree and active membership in The American Dietetic Association (ADA). Programs II and III in general dietetics and administrative dietetics lead to a B.S. degree and affiliate membership in ADA and active membership upon completion of an approved internship, master's degree, or an approved work experience. See information earlier in this department.

Liberal-general education courses (53-55 hours)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
ECON 110	Economics I	3
PSYCH 110	General Psychology	3
BIOL 198	Principles of Biology	4
BIOL 240	Structure & Functions of the Human Body	6
LM 650	Fundamentals of Veterinary Public Health	3
	or	
BIOL 220	Bacteriology & Man	3
	or	
BIOL 555	Microbiology	5
CHM 110	General Chemistry	5
CHM 190	Elementary Organic Chemistry	3
CHM 191	Elementary Organic Chemistry Lab	2
BIOCH 201	Elementary Biochemistry	3
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 20-	Computer Science Language Lab	2
MATH 100	College Algebra	3
SOCIO 211	Introduction to Sociology	3
	Humanities electives	3

Choose one of the professional programs I, II, III

Program I: Coordinated undergraduate program in dietetics

Home economics core (10-11 hours)

FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 502	Principles of Nutrition	3
GNHE 120	Dimensions of Home Economics	1-2
	or	
GNHE 400	Home Economics Seminar	1

Professional courses (60 hours)

ACCTG 211	Financial Accounting	3
EDCI 316	Introduction to Instructional Media	1
FN 300	Food Preparation & Meal Management	4
FN 501	Food Science	3
FN 511	Introduction to Clinical Dietetic Practice	1
FN 610	Nutrition Needs Throughout the Life Cycle	3
FN 712	Diet Therapy	3
DRIM 430	Introduction to Professional Dietetic Practice	1
DRIM 440	Fundamentals of Quantity Food Production	5
DRIM 455	Foodservice Systems	7

Management semester

DRIM 560	Management in Dietetics	9
DRIM 635	Foodservice Equipment & Layout	2
DRIM 670	Seminar in Dietetics	2

Clinical semester

FN 513	Applied Normal Nutrition	3
FN 514	Nutrition in Medical Science	6
FN 515	Nutritional Care of Patients	6
DRIM 670	Seminar in Dietetics	1

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (0-3 hours)

Total hours for graduation 127

Program II: General dietetics
Home economics core (14-15 hours)

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 132	Basic Nutrition	3
	or	
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Professional courses (44 hours)

ACCTG 211	Financial Accounting	3
ASI 671	Meat Selection & Utilization	3
EDCI 316	Introduction to Instructional Media	1
MANGT 420	Management Concepts	3
MANGT 531	Personnel & Wage Administration	3
FN 300	Food Preparation & Meal Management	4
FN 501	Food Science	3
FN 610	Nutrition Needs Throughout the Life Cycle	3
FN 712	Diet Therapy	3
FN elective 600 level or above		3
DRIM 430	Introduction to Professional Dietetic Practice	1
DRIM 440	Fundamentals of Quantity Food Production	5
DRIM 455	Foodservice Systems	7
DRIM 635	Foodservice Equipment & Layout	2

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (10-13 hours)

Total hours for graduation 125

Program III: Administrative dietetics
Home economics core (14-15 hours)

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 132	Basic Nutrition	3
	or	
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Professional courses (47 hours)

ACCTG 211	Financial Accounting	3
ACCTG 370	Managerial Accounting	3
ASI 671	Meat Selection & Utilization	3
MANGT 420	Management Concepts	3
MANGT 520	Organizational Behavior	3
MANGT 530	Industrial & Labor Legislation	3
MANGT 531	Personnel & Wage Administration	3
FN 300	Food Preparation & Meal Management	4
FN 501	Food Science	3
FN 610	Nutrition Needs Throughout the Life Cycle	3
	or	
FN 712	Diet Therapy	3
DRIM 430	Introduction to Professional Dietetic Practice	1
DRIM 440	Fundamentals of Quantity Food Production	5
DRIM 635	Foodservice Equipment & Layout	2
DRIM 455	Foodservice Systems	7

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (7-10 hours)

Total hours for graduation 125

Restaurant management

Bachelor of Science in Restaurant Management

The curriculum involves study of management in commercial and industrial foodservices. Summer experience under approved conditions is advised throughout the time students are enrolled in this curriculum.

Liberal-general education courses (55 hours)

Communications

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
ENGL 416	Written Communication for the Sciences	3
SPCH 106	Oral Communication IA	3

Social sciences

ECON 110	Economics I	3
ECON 120	Economics II	3
POLSC 325	United States Politics	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3

Humanities (minimum 6 hours) 6

Physical science

CHM 110	General Chemistry	5
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 20-	Computer Science Language Lab	2
MATH 100	College Algebra	3
STAT 350	Business and Economic Statistics I	3

Biological science

BIOL 198	Principles of Biology	4
LM 650	Fundamentals of Veterinary Public Health	3

Supporting courses (16 hours)

ASI 671	Meat Selection & Utilization	3
FN 132	Basic Nutrition	3
FN 300	Food Preparation & Meal Management	4
FN 301	Trends in Food Products	3
ID 101	Design for Contemporary Living	3

Business administration support courses (12 hours)

MANGT 420	Management Concepts	3
MANGT 530	Industrial & Labor Relations	3
MANGT 531	Personnel & Wage Administration	3
MKTG 400	Marketing	3

Professional courses (34 hours)

ACCTG 211	Financial Accounting	3
ACCTG 221	Managerial Accounting	3
DRIM 120	Introduction to Restaurant Management	1

DRIM 440	Fundamentals of Quantity Food Production	5
DRIM 455	Foodservice Systems	7
DRIM 470	Seminar in Restaurant Management	1
DRIM 472	Restaurant Marketing	3
DRIM 473	Beverage Operations Management	3
DRIM 475	Field Experience in Restaurant Management	3
DRIM 480	Management in Commercial Foodservices	3
DRIM 635	Foodservice Equipment & Layout	2

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (7 hours)

Total for graduation 125

Courses in dietetics, restaurant and institutional management

Undergraduate credit

DRIM 120. Introduction to Restaurant Management. (1) I. A survey in the restaurant industry including management, personnel, and operations. DRIM-120-0-1307

DRIM 430. Introduction to Professional Dietetic Practice. (1) I. A study of the dietitian's role in the nutritional care of people with emphasis on the attributes and characteristics of professional practice. Pr.: Consent of instructor. DRIM-430-0-1307

DRIM 440. Fundamentals of Quantity Food Production. (5) I, II. Principles and methods of preparing food in quantity; considerations of menu planning, quality food, food acceptability, work methods, sanitation, safety, and production controls. Three hours rec. and six hours lab. Pr.: FN 300. DRIM-440-1-1307

DRIM 450. Field Experience in Dietetics and Institutional Management. (1-5) I, II, S. Supervised professional experience in dietetics and institutional foodservice. May be taken more than once. DRIM-450-2-1307

DRIM 455. Foodservice Systems. (7) I, II. Institutional foodservice as a system; menu planning, forecasting; procurement, production and service; employee interviewing and training; supervisory experience in campus and community foodservices. Field trip required. Three credits rec., four credits practicum. Pr.: DRIM 440 and consent of instructor. DRIM-455-2-1307

DRIM 470. Seminar in Restaurant Management. (1-3) I, II. Current developments and trends in restaurant management. Pr.: DRIM 440. DRIM-470-0-1307

DRIM 472. Restaurant Marketing. (3) II. Study of restaurant marketing perspective designed to satisfy ever-changing customer needs; planning, goal-setting, and strategic management; analysis and positioning; application of marketing tools to foodservice operations. Pr.: MKTG 400 and DRIM 440. DRIM-472-0-1307

DRIM 473. Beverage Operations Management. (3) I. Managing the beverage operation; study of purchasing; inventory and stock handling; beverage and cash control; merchandising and service; regulatory bodies and laws. Three hours rec. per week. Pr.: ACCTG 211. DRIM-473-0-1307

DRIM 475. Field Experience in Restaurant Management. (3) I, II, S. Supervised experience in a commercial foodservice. Pr.: DRIM 455. DRIM-475-2-1307

DRIM 480. Management in Commercial Foodservices. (3) II, S. Procedures, approaches, and techniques of management as they relate to various categories of commercial foodservices; laws and regulations affecting foodservices; analysis of principal operating problems; financial analysis and cost control. Pr.: DRIM 455. DRIM-480-0-1307

DRIM 499. Problems in Dietetics, Restaurant and Institutional Management. (Var.) I, II, S. Independent study under the supervision of a faculty member. Pr.: Consent of instructor. DRIM-499-3-1304

Undergraduate and graduate credit

DRIM 560. Management in Dietetics. (9) I, II. Functions of management in foodservice; financial control policy making, interdepartmental relationships, foodservice planning; independent study and management experience in campus and other foodservices. Three credits rec., six credits practicum. Pr.: DRIM 455 and consent of instructor. DRIM-560-2-1307

DRIM 635. Foodservice Equipment and Layout. (2) I, II. Factors affecting the selection and arrangement of equipment in foodservice systems. Field trip required. Pr.: DRIM 440. DRIM-635-0-1307

DRIM 670. Seminar in Dietetics. (1-2) I, II. Investigation of trends and current research in dietetics. Pr.: DRIM 455 and consent of instructor. May be taken more than once. DRIM-670-0-1307

DRIM 710. Readings in Institutional Management. (1-3) I, II, S. Directed study of current literature in institutional management and related areas. DRIM-710-3-1307

DRIM 720. Current Issues in Dietetics, Restaurant and Institutional Management. (1-3). Recent developments and concerns related to management of dietetic services. Pr.: DRIM 440. DRIM-720-2-1307

DRIM 780. Problems in Dietetics, Restaurant and Institutional Management. (Var.) I, II, S. Individual investigation of problems in institutional management. Conferences and reports at appointed hours. Pr.: DRIM 440; DRIM 480 or 560 or MANGT 420. DRIM-780-3-1307

DRIM 785. Practicum in Foodservice Systems Management. (1-6) I, II, S. Professional experiences in approved foodservice organization as a member of the management team under faculty supervision. Pr. or conc.: DRIM 440; DRIM 480 or 560 or MANGT 420. DRIM-785-2-1307

Graduate credit

DRIM 805. Food Production Management. (3) II. In alternate years. Production planning and controls in foodservice systems. Decision optimization and systems analysis in foodservice organizations. Consideration of various types of foodservice systems. Pr.: DRIM 440; DRIM 480 or 560 or MANGT 420. DRIM-805-0-1307

DRIM 810. Institutional Management Research Techniques. (3) I. Survey and application of research methodology in institutional management. Pr.: DRIM 440. DRIM-810-0-1307

DRIM 880. Resource Procurement for Foodservice Systems. (3) II. Principles of materials management and procurement of material resources for the foodservice system. Pr.: DRIM 440; DRIM 480 or 560 or MANGT 420. DRIM-880-0-1307

DRIM 885. Seminar in Institutional Management. (1) I, II, S. Developments in research related to foodservice management. Pr.: DRIM 440. DRIM-885-0-1307

DRIM 890. Foodservice Administration. (3) I. Advanced study of management applied to foodservice systems. Pr.: DRIM 440; DRIM 480 or 560 or MANGT 420. DRIM-890-0-1307

DRIM 895. Cost Controls in Foodservice Systems. (3) II. In alternate years. Review of the components of cost control systems; analysis of financial data for foodservice operations; techniques for budget planning and control. Pr.: ACCTG 260; DRIM 440; DRIM 480 or 560 or MANGT 420. DRIM-895-0-1307

DRIM 899. Research in Institutional Management. (Var.) I, II, S. Pr.: Consent of instructor and completion of at least half of coursework for M.S. in Institutional Management. DRIM-899-4-1307

DRIM 999. Research in Institutional Management. (Var.) I, II, S. Pr.: Consent of major professor. DRIM-999-4-1307

Family and Child Development

Judy Rollins,* head of department

Professors Bollman,* Jurich,* Kennedy,* Rekers,* and Stith;* Associate Professors Bergen,* Davis,* Poresky,* Rollins,* Russell,* and Scheidt;* Assistant Professors Briggs, George,* Hastings, Holcomb,* McNeil,* and Schumm;* Instructors Adams, Hoover, Swihart, and West; Emeriti: Professors Kell* and Long;* Assistant Professor Larson.

The Department of Family and Child Development focuses on the study of individuals and families from a multidisciplinary perspective. Developmental processes throughout the life cycle, interpersonal relationships, and educational programming for individuals and families are the primary emphases of the undergraduate programs.

Undergraduate study

Three programs are available at the undergraduate level. They are early childhood education, family life and human development, and health.

Practical experiences. The department places great emphasis on the importance of laboratory and field experiences along with academic preparation. Laboratories are an integral part of many course offerings. The Early Childhood Laboratory and The Stone House Child Care Center provide on-campus opportunities for students to observe, participate and teach in child care programs. Off-campus observation and participation with children of various ages are arranged in conjunction with a number of courses. A research room provides further opportunities for students to observe a child or groups of children in an experimental setting.

Field experiences off campus involving direct contact with families, single adults, adolescents, and children are required for students majoring in the community service option of family life and human development. These experiences are available through supervised placement in Manhattan and surrounding areas. Concurrently, the student is enrolled in at least two other courses. During this time of professional involvement and study, students are supervised by department faculty and agency personnel. Other opportunities for these students during their four-year course of study are available through the Family Center, Friendship Tutoring, Fone, and several campus organizations and offices which focus on meeting students' needs.

Students in the health program also have a field experience in a health care setting within the community.

Each student in the early childhood education program has a full semester of student teaching with pre-kindergarten children.

Family and child development and social work: Students in the family life and human development option may choose a degree program which includes a degree in social work, planning with an advisor in family and child development and an advisor in social work. Those electing this course of action will work closely with the family and child development advising staff to include preliminary requirements and to make proper arrangements for entry into this special program. Such a program will give the student an opportunity for understanding interpersonal relationships and the concerns of families along with beginning social work skills. The social work major, housed in the Department of Sociology, Anthropology, and Social Work, is accredited by the Council on Social Work Education.

Early childhood education and elementary education: Students may consider the program in early childhood education and elementary education offered by family and child development and the Department of Curriculum and Instruction in the College of Education. Students electing this choice will have two professional teaching semesters, one at the below five-year level and one at the kindergarten through sixth-grade level.

Graduate work in early childhood handicapped is offered as a cooperative effort by the Department of Family and Child Development and the Department of Administration and Foundations in the College of Education.

Graduate study

The department offers work toward the master of science degree for students interested in professional specializations, such as, adolescence and youth, early childhood education, early childhood handicapped, family life education and consultation, life-span development, and marriage and family therapy. Each of these emphasizes a focus unique to the specialization. All specializations are designed to acquaint students with concepts of human development and interpersonal relationships as individuals and within the context of the family. Comprehensive courses and practica enhance the students' opportunities for professional growth and development and for gainful employment in a diversity of professional settings.

The Department of Family and Child Development participates in the graduate program for the Ph.D. in home economics. A specialization in marriage and family therapy is included in this doctoral degree. The marriage and family therapy program at both the master's and doctoral level has become the third such program in the United States to receive accreditation from the American Association of Marriage and Family Therapists.

Early childhood education

Bachelor of Science in Family and Child Development

This progran is for students who wish to work in pre-kindergarten education programs in administrative or teaching positions, including work with parents and community resources as well as with young children.

Program approval has been granted KSU in the area of early childhood education. Students completing the early childhood education program in family and child development are eligible to receive certification from the Kansas State Department of Education in Early Childhood Education. To enter the ECE teacher education program students must apply for admission to teacher education.

Admission to teacher education: Application forms for admission to teacher education are available in the Office of Student Personnel Services, College of Education, Room 013, Bluemont Hall. Details and deadlines concerning applying can be found in the College of Education section of this catalog. Decision for admission will be made as soon as possible after the end of the semester, except in the case of first-semester transfer students who have satisfied all admission to teacher education requirements. The application for admission to the teacher education program should be filed two years prior to graduation. If deadline schedule is not adhered to, students may experience difficulties in meeting certification requirements.

Transfer students transferring 50 or more hours from another institution should apply at the time of initial enrollment.

Requirements for admission to early childhood teacher education programs may also be found in the College of Education section. Details concerning these requirements include:

1. The required 2.5 grade point average will be based on all courses attempted at Kansas State University and at all previously attended colleges or universities.

2. Any one of the following speech courses may be used to fulfill the requirement: SPCH 105, 106, 108, or 109.

3. Students must take and pass a basic skills test in communications and mathematics before the end of the first semester of the junior year. Completion of the test prior to application for admission to teacher education is strongly recommended. If the test has not been completed at the time of application for admission to teacher education, it must be taken at the next administration of the test. The Basic Skills Test will be scheduled during both fall and spring semesters. Registration for the test must be completed by the announced deadline.

4. Students must earn a cumulative 2.5 GPA on all home economics professional courses.

Application forms for registration for the Basic Skills Test are available in the Office of Student Personnel Services, College of Education, Bluemont Hall, Room 013.

Applicants who have a grade point average of less than 2.5 may apply for admission to teacher education on a probationary status provided all other requirements have been met. Those admitted on a probationary basis must achieve cumulative grade point averages of 2.5 by the time they have completed the first 30 hours after admission to teacher education, or they will be dropped from the teacher education program.

Student teaching: Application for student teaching must be made no later than the semester in which the student is enrolled in FCDEV 535, Developmental Program Planning. Application forms are available in the advising center, Department of Family and Child Development, Justin Hall, Room 314.

Certification: To be eligible for certification in early childhood education, the student must complete the early childhood education option, and receive an affirmative recommendation for the Department of Family and Child Development that is submitted to the certifying officer of Kansas State University.

Application for certification must be made during the semester in which the degree will be received. Forms are available in the Office of Student Personnel Services, College of Education, Bluemont Hall, Room 013.

Liberal-general education courses (50 hours)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
ECON 110	Economics I	3
PSYCH 110	General Psychology	3
BIOL 198	Principles of Biology	4
SOCIO 211	Introduction to Sociology	3
Approved literature and/or language		6
Music or art appreciation electives		2-3
Additional humanities		5-6
Math electives		3
Additional approved biological and physical science		5
Social science electives at 300 level or above		6

Home economics core (14-15 hours)

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
1D 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 132	Basic Nutrition	3
	or	
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Professional courses

PE 376	First Aid	1
SPPAT 555	Language Development	3
FCDEV 230	Introduction to Human Development*	3
FCDEV 235	Infants & Toddlers	3
FCDEV 310	The Preschool Child	3
FCDEV 311	The Preschool Child Lab	1
FCDEV 350	Family Relationships & Sex Roles*	3
FCDEV 420	Interactional Techniques with Young Children	3
FN 603	Maternal & Child Nutrition	3
FCDEV 535	Developmental Program Planning for Young Children	3
FCDEV 536	Developmental Program Planning for Young Children Lab	1
FCDEV 524	Early Childhood Education Program Models	3

FCDEV 537	Methods & Resources in Early Childhood Education	3
FCDEV 538	Methods & Resources in Early Childhood Education Lab	2
FCDEV 625	Directed Experiences in Early Childhood Education	8
FCDEV 626	Administration of Early Childhood Programs	3
FCDEV 650	The Family	3
FCDEV 670	Parent Education	3
	Family & child development professional electives	3
FCDEV 352	Concepts of Personal Health	3
FN 132	Basic Nutrition*	3
	or	
FN 602	Principles of Nutrition*	3

Physical education

PE 101	Concepts of Physical Education	1

Unrestricted electives (4-8 hours)

Total for graduation 125

*If not taken in home economics core

Family life and human development

Bachelor of Science in Family and Child Development

This program is for students interested in youth and family life programs and in the total life span approach to understanding development. See departmental information earlier in this section.

Liberal-general education courses (41 hours)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
ECON 110	Economics 1	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3
	Social science electives at 300 level or above	6
	Biological and physical sciences	12
	Humanities	6

Home economics core (14-15 hours)

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 132	Basic Nutrition	3
	or	
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Professional and supporting courses

FCDEV 230	Introduction to Human Development*	3
FCDEV 310	Preschool Child	3
FCDEV 311	Preschool Child Lab	1
FCDEV 350	Family Relationships & Sex Roles*	3
FCDEV 430	Middle Child	2
FCDEV 431	Middle Child Lab	1
FCDEV 510	Human Development & Aging	3
FCDEV 520	The Adolescent	2
FCDEV 521	The Adolescent Lab	1
FCDEV 650	The Family	3

Choose either area A or area B

Area A. Individual and family development

FCDEV 235	Infants & Toddlers	3
FCDEV 465	You & Your Sexuality	3
FCDEV 272	Helping Relationships	3
FCDEV 352	Concepts of Personal Health	3
FCDEV 370	Parenting	3
	(Include FN 132, Basic Nutrition, or FN 502, Principles of Nutrition, if not taken in core.)	
	Professional electives**	20

Area B. Community services

SOCWK 260	Introduction to Social Work	3
FCDEV 272	Helping Relationships	3
FCDEV 400	Field Study	8
FCDEV 670	Parent Education	3
FCDEV 750	Low Income Families	3
	(Include FN 132, Basic Nutrition, or FN 502, Principles of Nutrition, if not taken in core.)	
	Professional electives**	18

Physical education

PE 101	Concepts of Physical Education	1

Unrestricted electives (14-18 hours)

Total for graduation 125

*If not taken in home economics core

**Selected in consultation with faculty advisor and to include at least three hours from the College of Home Economics (other than the family and child development department).

Health

Bachelor of Science in Health

This curriculum prepares students to assess the health practices of individuals and groups; and design, implement, and evaluate programs in health promotion. This curriculum also provides excellent background for graduate study in public health.

Liberal-general education courses (53 hours)

Communications		8
ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
Social sciences		9
ECON 110	Economics	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3
Humanities		6
PHILO 130	Introduction to Ethics	3
	Elective	3
Biological and physical sciences		20
BIOL 198	Principles of Biology	4
BIOL 240	Human Body	6
CHM 110	General Chemistry	5
BIOCH 120	Introduction to Organic & Biochemistry	5

Mathematics		6
MATH 100	College Algebra	3
STAT 320	Elementary Statistics	3
	or	
STAT 340	Biometrics	3
Computer science		4
CMPSC 200	Fundamentals of Computer Programming	2
CMPSC 206	BASIC Language Laboratory	2

Professional and supporting courses (53 hours)

FCDEV 230	Introduction to Human Development	3
FCDEV 350	Family Relationships & Sex Roles	3
FCDEV 352	Concepts of Personal Health	3
FCDEV 465	You & Your Sexuality	3
FCDEV 510	Human Development & Aging	3
FCDEV 555	Community Health Programs	3
FCDEV 580	Directed Field Experiences	8
FN 502	Principles of Nutrition	3
FN 603	Maternal & Child Nutrition	3
FEC 110	Consumer Action	2
PE 335	Physiology of Exercise	3
PE 376	First Aid/CPR	1
SOCIO 411	Social Problems	3
SOCIO 532	Community Organization & Leadership	3
EDCI 316	Introduction to Instructional Media	1
JMC 515	Public Relations	3
PSYCH 202	Drugs & Behavior	2
BIOL 220	Bacteriology & Man	3

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (18 hours)

Total for graduation	125

Note: A secondary major in Gerontology would require 24 hours. The College of Education requirements for teacher certification could be met with 26 hours.

Courses in family and child development

Undergraduate credit

FCDEV 230. Introduction to Human Development. (3) I, II, S. A study of lifespan human development through an individual's awareness and understanding of his own physical, social, and psychological growth and relationships with his family, peers, and others. One hour lec. and two hours rec. a week. FCDEV-230-0-I305

FCDEV 235. Infants and Toddlers. (3) I. Prenatal and infant development from conception through age two. Study of the influences on the development and growth of the infant. FCDEV-235-0-I305

FCDEV 272. The Helping Relationship. (2-3) I, II. Characteristics of the helping relationship; consideration of personal qualities necessary for recognizing needs of individuals and families; identification of effective procedures for referral to appropriate professions and agencies. Pr.: PSYCH 110 or FCDEV 230. Not open to seniors. FCDEV-272-0-1305

FCDEV 300. Problems in Family and Child Development. (Var.) I, II, S. Independent or small group study. Pr.: Consent of instructor. FCDEV-300-3-I305

FCDEV 310. The Preschool Child. (3) I, II, S. Principles of development and growth of children from conception to five years of age in homes and in groups. Pr.: PSYCH 110 and sophomore standing. FCDEV-310-0-1305

FCDEV 311. Preschool Child Lab. (1) I, II, S. Observation of the development and guidance of children from birth to five years of age with emphasis on observation of children in groups. Open to FCDEV and Home Ec. Ed. majors only. Conc. with FCDEV 310. FCDEV-311-1-I305

FCDEV 315. Community Resources for Children. (3) II. In alternate years. Study of legislation, community agencies and programs pertaining to children. Field trips arranged. Pr.: FCDEV 310 and SOCIO 211. FCDEV-315-0-1305

FCDEV 350. Family Relationships and Sex Roles. (3) I, II, S. Effects of family interaction upon individual development and sex roles; consideration of pre-marital, marital, and parent-child relationships. Pr.: Sophomore standing. FCDEV-350-0-I305

FCDEV 352. Concepts of Personal Health. (3) I, II. Current health issues in various developmental stages of the individual. Factors conducive to maintaining health of family members from the prenatal period through old age. Pr.: Sophomore standing. FCDEV-352-0-I305

FCDEV 370. Parenting. (3) I, II. Principles and philosophies relevant to the act of parenting. How to establish a nurturing relationship between parents and their children. Pr.: FCDEV 230. FCDEV-370-0-1305

FCDEV 400. Field Study in Family and Child Development. (1-8) I, II, S. Directed study of processes of human development and participation in a field setting. Pr.: Consent of department head. FCDEV-400-2-I305

FCDEV 420. Interaction Techniques with Young Children. (3) I. A developmental approach to the acquisition of interaction techniques conducive to healthy emotional and self-concept growth in the child from birth to five years. Two hours lec. and one hour lab. Pr.: FCDEV 310 or consent of instructor. FCDEV-420-0-1305

FCDEV 430. Middle Childhood. (2) I. Developmental characteristics of middle childhood as a basis for guidance with emphasis on understanding of family and peer group relationships. To be taken conc. with FCDEV 431. Pr.: PSYCH 110 and one of the following: FCDEV 310, EDAF 215, or PSYCH 280. FCDEV-430-0-1305

FCDEV 431. Middle Childhood Lab. (1) I. Observation, recording, and evaluating out-of-school behavior of children 6 to 12 years of age with a focus on the helping relationship in light of developmental aspects. To be taken conc. with FCDEV 430. FCDEV-431-I-I305

FCDEV 440. Human Development Facilitation. (2) I, II. Applied study of leadership skills in small discussion groups, with emphasis on learning and facilitating Introduction to Human Development concepts. Taken conc. with FCDEV 441. Pr.: FCDEV 230, preparatory workshop, and consent of instructor. FCDEV-440-0-I305

FCDEV 441. Human Development Facilitation Lab. (1) I, II. Recitation group leader for FCDEV 230. Assist students in discussion and preparing group presentations; evaluate written work and course participation of students in group. Conc. FCDEV 440. FCDEV-441-I-1305

FCDEV 465. You and Your Sexuality. (3) I, II. Study of the role and meaning of human sexuality in relation to oneself as well as in inter-relationships with others. Pr.: One course in social sciences. FCDEV-465-0-1305

Undergraduate and graduate credit in minor field

FCDEV 510. Human Development and Aging. (3) I. Survey of issues, research, and problems in aging and human development throughout adulthood, with particular emphasis upon the later years. Pr.: FCDEV 230 or PSYCH 280. FCDEV-510-0-1305

FCDEV 520. The Adolescent. (2) II. Focus on interpersonal processes; principles and characteristics of the helping relation in light of developmental aspects of adolescence. Take FCDEV 521 conc. Pr.: Five hours of FCDEV or five hours of a combination of PSYCH and EDAF PSYCH and junior standing. FCDEV-520-0-1305

FCDEV 521. The Adolescent Lab. (1) II. Observation, recording, and evaluating of out-of-school behavior of adolescents with focus on developing a helping relationship with an adolescent. Take FCDEV 520 conc. FCDEV-521-1-1305

FCDEV 524. Early Childhood Education Program Models. (3) II. Examination of programs for young children, including philosophical and theoretical foundations. Implementation and evaluation of program models and related issues and research. Pr.: FCDEV 310 or PSYCH 280. FCDEV-524-0-1305

FCDEV 530. Advanced Study of Children. (3) II. Behavioral characteristics and developmental processes during childhood years. Pr.: Junior standing and either FCDEV 310, EDAF 215, or PSYCH 280. FCDEV-530-0-1305

FCDEV 535. Developmental Program Planning for Young Children. (3) I, II. Principles and techniques of curriculum building to meet the needs of preschool children in the areas of social, emotional, cognitive, motor, and language development. Take FCDEV 536 conc. Pr.: FCDEV 310, FCDEV major, and consent of instructor. FCDEV-535-0-1305

FCDEV 536. Developmental Program Planning for Young Children Lab. (1) I, II. Application of principles and techniques covered in FCDEV 535 in a preschool program. To be taken conc. with FCDEV 535. FCDEV-536-1-1305

FCDEV 537. Methods and Resources in Early Childhood Education. (3) I, II. Synthesis of methods and resources used in selecting, preparing, and presenting developmental curriculum experiences for young children in preschool programs; to be taken concurrently with FCDEV 538. Pr.: FCDEV 535 and 536. FCDEV-537-0-1305

FCDEV 538. Methods and Resources in Early Childhood Education Lab. (2) I, II. Supervised implementation in a laboratory preschool program of curriculum activities and teaching methods prepared in FCDEV 537; to be taken concurrently with FCDEV 537. Pr.: FCDEV 535 and 536. FCDEV-538-1-1305

FCDEV 555. Community Health Programs. (3) I. Analysis of local, state, and national health problems with emphasis on the programs designed to address these concerns. Pr.: FCDEV 352 and BIOL 198. FCDEV-555-0-1305

FCDEV 580. Directed Field Experience. (6-8). A block field placement in agencies outside of Manhattan. Faculty-supervised experience in direct service to clients: individuals, groups, and communities. Weekly seminar during placement emphasizes theory underlying the practice. Pr.: SOCWK 260 and consent of instructor. FCDEV-580-2-1305

FCDEV 585. Professional Seminar in Family Life Education. (4) I, II. Consideration of professional philosophy, identity, ethics, career development and characteristics of client populations. Development of skills for family life educators working in agencies with various socioeconomic, age, and ethnic groups. Pr.: Conc. enrollment in FCDEV 580. FCDEV-585-0-1305

FCDEV 590. Proseminar in Child and Family. (1-3) On sufficient demand. Review of specific issues or topics affecting children and/or families. Pr.: Junior standing and consent of instructor. FCDEV-590-0-1305

Undergraduate and graduate credit

FCDEV 625. Directed Experiences in Early Childhood Education (with children 2-5). (8) I, II, S. Participation in a preschool program; planning, instruction, evaluation. Prearrangement and consent of instructor required. Pr.: FCDEV 537 and 538. FCDEV-625-2-1305

FCDEV 626. Administration of Early Childhood Programs. (3) I. Rationale for and techniques of administering programs for preschool children, including health, education, social services, parent involvement. Pr.: Nine hours family and child development or consent of instructor. FCDEV-626-0-1305

FCDEV 650. The Family. (2-3) I, II, S. Consideration of the family throughout the family life cycle; developmental tasks at each stage. Present-day resources available for strengthening American families. Pr.: FCDEV 350 or consent of instructor. FCDEV-650-0-1305

FCDEV 652. Black Family. (2-3) I, II. Selected topics for understanding life styles of black families. Implications for professionals working with black children and families. Pr.: Nine hours of social science and junior standing. FCDEV-652-0-1305

FCDEV 654. Death and the Family. (2-3) I, S. Exploration of contemporary attitudes toward death and dying; related influences on individual development and family life. Pr.: FCDEV 650 or SOCIO 640. FCDEV-654-0-1305

FCDEV 670. Parent Education. (3) I, II. Principles in child development and family relationships applied to professional group and individual work with parents. Pr.: FCDEV 310 and 650 or six hours psychology and consent of instructor. FCDEV-670-0-1305

FCDEV 681. Health for Elementary Teachers. (3) II. To assist the prospective and/or practicing teacher in developing instructional strategies and resources for use in promoting health education for a healthy life style in the elementary school setting. Pr.: FCDEV 352 and senior standing. FCDEV-681-0-1305

FCDEV 700. Problems in Family and Child Development. (Var.) I, II, S. Independent study on aspects of family and child development. Pr.: Consent of department head. FCDEV-700-3-1305

FCDEV 704. Seminar in Family and Child Development. (Var.) I, II, S. Interpretation and evaluation of information on varied topics relating to family members. May be taken more than one semester with consent of department head. Pr.: FCDEV 650 or consent of instructor. FCDEV-704-0-1305

FCDEV 708. Topics in Family and Child Development. (2-3) I, II, S. Review of recent research and theory related to exploration of methods and family and interpersonal processes.

Pr.: Consent of instructor. May be taken more than one semester. FCDEV-708-0-1305

FCDEV 710. Child Care: Components and Issues. (2-3) Alternate II, or S. Resources and facilities of quality child care; exploration of methods and philosophies of such programs; designed for those working with paraprofessional child care personnel. Pr.: Fifteen hours of either social science and/or FCDEV or combination. FCDEV-710-0-1305

FCDEV 728. Assessment of Young Children. (3) I. Theory and practice of individual assessment of handicapped and normal children, infancy to age eight, including cognitive, language, fine and gross motor, social, and self-help skills. Focus on selection, administration, interpretation, and evaluation of screening and comprehensive evaluation instruments for assessment and individual program planning. Pr.: FCDEV 310 or equiv. FCDEV-728-0-1305

FCDEV 750. Low-Income Families. (2-3) I, II. Factors affecting family life in disadvantaged families; life styles of subcultures; proposed programs; implications for persons working with low-income children and families. Pr.: FCDEV 650 or consent of instructor. FCDEV-750-0-1305

Graduate credit

FCDEV 810. Child Development. (3) I, II. Behavioral characteristics and developmental processes in childhood and adolescence. Analysis of developmental trends and issues in terms of research evidence and theoretical expectations. Pr.: FCDEV 310 and three additional hours in FCDEV or child psychology. FCDEV-810-0-1305

FCDEV 815. Infant Behavior and Development. (3) II. In alternate years. Study of the infant as a developing individual within the family; examination of the theories and research relevant to development from conception through the second year. Pr.: FCDEV 310, 810, and BIOL 198. FCDEV-815-0-1305

FCDEV 820. Theories of Child Development. (3) I. Theories of development relating to physical, social, and psychological patterns of children's growth and interaction with the family and the community. Pr.: FCDEV 310 and three additional hours in FCDEV or child psychology. FCDEV-820-0-1305

FCDEV 822. Transition to Adulthood. (3) S. In alternate years. Advanced study of theory and research of the transition period from adolescence through youth to adulthood. Pr.: FCDEV 520 and 810. FCDEV-822-0-1305

FCDEV 824. Parent-Child Interaction: Theory and Research. (3) II. Developmental theories and empirical research concerning the reciprocal interactions between parents and their children focusing on the socialization of the child within the family. Pr.: FCDEV 810. FCDEV-824-0-1305

FCDEV 830. Advanced Program Development. (2-3) Alternate II or S. Analysis of the process and application of child development theory to early childhood program planning. Pr.: FCDEV 820. FCDEV-830-0-1305

FCDEV 840. Social Processes in Human Development. (3) I. Integration of principles of social maturation and growth with physiological and self-processes of human development. Pr.: Eight hours natural science and eight hours social science or consent of instructor. FCDEV-840-0-1305

FCDEV 842. Physiological Processes in Human Development. (3) In alternate years. Integration of principles of physiological growth with social and self-processes of human development. Pr.: Eight hours natural science and eight hours social science or consent of instructor. FCDEV-842-0-1305

FCDEV 843. Self-Processes in Human Development. (3) II. Integration of precepts relating to self with principles of social and physiological processes in human development. Pr.: Eight hours natural science and eight hours social science or consent of instructor. FCDEV-843-0-1305

FCDEV 845. Adult Development and Aging. (3) II. Developmental aging research as related to individual, social, and family functioning throughout adulthood. Pr.: Twelve hours social science. FCDEV-845-0-1305

FCDEV 850. Family Components and Issues. (3) I, II. Survey of family research literature to illustrate various approaches to the study of the family and to understand family changes within the life cycle. Pr.: FCDEV 650. FCDEV-850-0-1305

FCDEV 855. Family Crisis. (3) I. The nature of stress in the family from a theoretical and research base, focusing on the genesis of family crisis and the family's response to stress and crisis. Pr.: FCDEV 650. FCDEV-855-0-1305

FCDEV 862. Marital Interaction. (3) I. A study of the dynamics of marital interaction with emphasis upon the interpersonal relationships and processes of adjustment. Pr.: FCDEV 350 and 650, consent of instructor. FCDEV-862-0-1305

FCDEV 863. Single-Parent and Reconstituted Families. (3) I, II, S. Survey of research literature regarding single-parent and reconstituted families. Demography, complexity, problems, strengths, and processes of adjustment of family units and their members. Implications for professionals working with these families. Pr.: FCDEV 650. FCDEV-863-0-1305 .

FCDEV 865. Human Sexuality. (3) II, alternate S. Focus on implications of personal and familial aspects of human sexuality throughout the life cycle. Pr.: FCDEV 350 and six hours social science. This course is the same as HLTH 765. FCDEV-865-0-1305

FCDEV 870. Principles of Marriage and Family Counseling. (3) I, II. Examination of processes in marriage and family counseling; study of interactions within the counseling setting; and application of knowledge of the family and of marriage to the helping relationship. Pr.: DED 823; FCDEV 850; some of the material is of a confidential nature, therefore, consent of instructor is required. FCDEV-870-0-1305

FCDEV 875. Delivery of Human Services. (3) I, II, alternate S. Cognitive and experiential understanding of professional responsibilities to work effectively with families in an educational outreach or consultative setting. Pr.: FCDEV 272 or 420 and 650. FCDEV-875-0-1305

FCDEV 879. Family Life Education and Consultation. (3) I, II. Theory and procedures for family life education and consultation with professional and volunteer staff in a variety of settings. Pr.: FCDEV 272 or 420 and 650. FCDEV-879-0-1305

Practicums in Family and Child Development. (Var.) I, II, S. Supervised experience in providing help and/or instruction in the several areas of family and child development presented in

terms of the special interests of the students. Consent of practicum supervisor is required for each.

FCDEV 880. Practicum in Counseling. (Same as PSYCH 860 and DED 863.) Pr.: FCDEV 870, DED 823. FCDEV-880-2-1305

FCDEV 881. Practicum in Family and Community Services. Pr.: Nine hours Social Science. FCDEV-881-2-1305

FCDEV 882. Practicum in Study of Student Development. FCDEV-882-2-1305

FCDEV 883. Practicum in Early Childhood Education. Pr.: FCDEV 610. FCDEV-883-2-1305

FCDEV 884. Practicum in Parent Education. Pr.: FCDEV 670. FCDEV-884-2-1305

FCDEV 890. Research Methods in Family and Child Development. (3) I, II. Study and application of family and child development methodology for research in graduate programs and professional careers. Pr.: Six hours in family and child development at 600 level or higher or consent of instructor. FCDEV-890-0-1305

FCDEV 892. Practicum in Human Development Research. (Var.) I, II, S. Observation, modification, and reporting of behavior. Pr.: FCDEV 840, 842, or 843; course in methods of research; six other graduate hours in family and child development; consent of major professor. FCDEV-892-4-1305

FCDEV 894. Readings in Family and Child Development. (Var.) I, II, S. Implications of research findings in preparation for professional work in counseling, teaching, and research in family and child development. Pr.: FCDEV 210 and FCDEV 650 and six hours in social science or consent of department head. May be taken more than once. FCDEV-894-3-1305

FCDEV 895. Principles and Techniques of Family Measurement. (3) II. The comparative reliability and validity of current measures of family interaction and analysis of their suitability for use in program evaluation of family life education and family therapy. Pr.: FCDEV 850 and a graduate level research methods course. FCDEV-895-0-1305

FCDEV 896. Advanced Family Therapy. (3) I. Analysis of care management issues and literature related to the application of advanced techniques in family therapy. To be taken concurrently with FCDEV 880. Pr.: FCDEV 870. FCDEV-896-0-1350

FCDEV 899. Research in Family and Child Development. (Var.) I, II, S. Individual research problems which may form the basis for the master's thesis or report. Pr.: Consent of department head. FCDEV-899-4-1305

FCDEV 908. Topics in Family Life Education and Consultation. (3) On sufficient demand. Recent research, theory construction, and program development; focusing on selected relevant topics. Designed for doctoral students in Family Life Education and Consultation. Pr.: FCDEV 879. FCDEV-908-0-1305

FCDEV 950. Family Processes. (3) In alternate years. Examination of theoretical approaches to the study of the family unit from the perspective of interpersonal relationships; . participant observation of families and/or analysis of case materials. Pr.: FCDEV 850. FCDEV-950-0-1305

FCDEV 979. Advanced Family Life Education and Consultation. (3) II. In alternate years. Theory and practices of family life education and consultation, including issues of development of family life profession and national family policy. Pr.: FCDEV 879. FCDEV-979-0-1305

FCDEV 988. Conjoint and Group Techniques in Family Counseling. (3) II, S. Advanced theory in marriage and family counseling with emphasis on group techniques. Pr.: FCDEV 880 and consent of instructor. FCDEV-988-0-1305

FCDEV 999. Research in Family and Child Development. (Var.) I, II, S. Pr.: Consent of major professor. FCDEV-999-4-1305

Family Economics

Sherman Hanna,* acting head of department

Professor Morse;* Associate Professors Hanna* and Lindamood;* Assistant Professors Annis,* Davis, and Rasmussen; Emeritus: Associate Professor Agan.*

This department offers studies in the areas of housing, real estate, household equipment, home management, consumer affairs, consumer education, consumer finance, insurance, financial counseling, and family economics. Modern laboratory facilities and equipment are provided.

Emphasis in the department is twofold: to study the impact of social and economic forces on the individual and family; and to study management of resources in relation to personal and family goals. Undergraduate options are consumer affairs, and housing and equipment.

Graduate study

The master of science degree is offered with specializations in family economics, housing, and household equipment. The Department of Family Economics participates in the Ph.D. in Home Economics program, under which students may emphasize consumer and family economics or housing. Field study and research are conducted in community programs, consumer affairs, aging, public policy on health, housing, inside environment air contaminant control, energy, credit, savings, and family resource management. All areas of the department have ongoing research programs.

Prerequisite to graduate work in these fields is a B.S. or B.A. degree, with a major in home economics or a related field. Several research and teaching assistantships are available each year.

Undergraduate study
Consumer affairs

Bachelor of Science in Consumer and Family Economics

This program allows 24 to 26 hours of electives for combinations of course work in consumer affairs, marketing, financial counseling, consumer education, business, or public service. Students prepare for a variety of consumer-related job opportunities.

Students may work with individuals and families in financial counseling, coordinated with the Army Community Services at nearby Ft. Riley. Through the Consumer Relations Board on campus, the Family Center, Social and Rehabilitation Services offices, and Social Security offices, students may gain experience in handling consumer complaints and working with agencies and businesses.

Liberal-general education courses (52 hours)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
PSYCH 110	General Psychology	3
ECON 110	Economics I	3
ECON 120	Economics II	3
MATH 100	College Algebra	3
POLSC 110	Principles of Political Science	3
	or	
POLSC 325	U.S. Politics	3
SOCIO 211	Introduction to Sociology	3
STAT 330	Elementary Statistics for Social Sciences	3
	Social science electives	9
	Humanities	3
	Biological sciences	3
	Physical, biological, or humanities electives	8

Home economics core (14-15 hours)

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 132	Basic Nutrition	3
	or	
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Professional and suppporting courses (46 hours)

	Home economics electives*	9
FEC 405	Personal & Family Finance	3
FEC 410	Consumer Relations Practicum	1
FEC 415	Consumer Law	3
FEC 420	Housing	3
FEC 440	Household Equipment	3
	or	
FEC 630	Household Equipment Theory	3
FEC 460	Family Resource Management Theory & Application	3
FEC 705	Financial Problems of Families	3
FEC 605	Consumers & The Market	3
FEC 700	Families in the American Economy	3
	Professional electives**	12

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (11-12 hours)

Total hours for graduation 125

*Not taken in home economics core
**Selected in consultation with faculty advisor.

Housing and equipment

Bachelor of Science in Consumer and Family Economics

Professional electives allow students to develop individual specializations in this program. The housing option allows for specialization in the areas of community planning, housing counseling, research, real estate, house planning, or kitchen design. The equipment option is for those interested in design and evaluation of household equipment, household consumer assistants, and consumer energy specialists, as well as the basic training for those who wish to prepare for research.

Liberal-general education courses (36 hours)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
ECON 110	Economics I	3
PSYCH 110	General Psychology	3
BIOL 198	Principles of Biology	4
MATH 100	College Algebra	3
STAT 320	Elements of Statistics	3
	Humanities electives	3

Students concentrating in housing are required to take:

POLSC 520	State & Local Government	3
SOCIO 211	Introduction to Sociology	3
SOCIO 530	Population & Human Ecology	3

Students concentrating in household equipment are required to take:

CHM 110	General Chemistry	5
PHYS 115	Descriptive Physics	4

Home economics core (14-15 hours)

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 132	Basic Nutrition	3
	or	
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Professional and supporting courses

FCDEV 350	Family Relationships & Sex Roles (if not taken in the core)	3
	or	
FCDEV 650	The Family	3
FEC 405	Personal & Family Finance	3
FEC 420	Housing	3
FEC 440	Household Equipment	3
FEC 460	Family Resource Management Theory & Application	3
FEC 660	Kitchen & Utility Area Planning	3
FEC 700	Families in the American Economy	3
	or	
FEC 605	Consumers & the Market	3

Professional courses for household equipment or housing* 19-21

Students concentrating in household equipment are required to take:

BIOL 220	Bacteriology of Man	3
CT 260	Textiles	3
FEC 650	Consumer Product Safety	3
FEC 740	Advanced Household Equipment	3
FN 300	Food Preparation & Meal Management	4
JMC 275	Reporting I	3

Students concentrating in housing are required to take:

PLAN 315	Introduction to Planning	3
SOCIO 531	Urban Sociology	3
FEC 720	Housing Requirements of Families	3
PLAN 750	Housing Programs & Policies	3
FEC 415	Consumer Law	3
FEC 700	Families in the American Economy**	3
	or	
FEC 605	Consumer & the Market**	3
FEC 625	Consumer & Energy Issues in Housing	3

Professional electives (18 hours)

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (14-18 hours)

Total hours for graduation 125

*Selected in consultation with faculty advisor.

**If not taken as a supporting course.

Courses in family economics

Undergraduate credit

FEC 110. Consumer Action. (2) I, II. Consumer rights and responsibilities emphasizing issues and problems confronting students, their families, and others as consumers. Political, social, economic, and legal implications of consumer decisions. Competencies and techniques for taking effective action. FEC-110-0-1304

FEC 400. Family Economics. (3) I, II. Economic forces affecting families, and management by families of their economic resources. Pr.: ECON 110 or conc. FEC-400-0-1304

FEC 405. Personal and Family Finance. (3) I, II. Practical aspects of money management with emphasis on consumer credit, savings, insurance, income tax, home financing, and budgeting. FEC-405-1-1304

FEC 410. Consumer Relations Practicum. (Var.) I, II, S. Supervised experiences in business-consumer relations and study of consumer issues, including consumer redress. Pr.: Consent of instructor. FEC-410-2-1304

FEC 415. Consumer Law. (3) II. A study of law and agency regulations related to consumer protection. Pr.: FEC 400, 405, or 605. FEC-415-0-1304

FEC 420. Housing. (3) I, II. Socio-economic aspects of housing, focusing on decisions made at the family, community, and national levels. Topics include finance, energy, space requirements, and special groups. Two hours lec. and two hours lab a week. Pr.: Sophomore standing. FEC-420-1-1304

FEC 440. Household Equipment. (3) I, II. Principles of operation, care and design of equipment used in the home; methods of evaluating equipment performance and demonstrating application of principles. Two hours lec. and three hours lab a week. FEC-440-1-1302

FEC 460. Family Resource Management Theory and Application. (3) I, II. The process by which individuals and families identify needs, set goals, and allocate resources. Two hours lec. and two hours lab each week. Pr.: Sophomore standing. FEC-460-0-1304

FEC 499. Problems in Family Economics. (Var.) I, II, S. Independent study. Pr.: Consent of instructor. FEC-499-3-1304

Undergraduate and graduate credit

FEC 600. Economic Status of Women. (3) I. Discrimination, rights, and responsibilities affecting the economic roles of women. Income, wealth, gainful and non-gainful employment, taxation, laws and attitudes. Pr.: Senior or graduate standing plus nine credit hours in social science. FEC-600-0-1304

FEC 605. Consumers and the Market. (3) I. Problems of the consumer in the present market, market practices, aids toward intelligent buying of commodities, and the types of protection, including legislation. Pr.: ECON 110. FEC-605-0-1304

FEC 610. Resources for Consumer Education. (2) S. Survey and evaluation of the subject matter content of consumer education books, pamphlets, and audiovisuals. Pr.: Six hours in consumer or education courses. FEC-610-0-1304

FEC 615. The Elderly Consumer. (3) II. An analysis of consumer problems of the elderly, emphasizing the relationship to national, state, and local public policy. Pr.: FEC 400. FEC-615-0-1304

FEC 625. Consumer and Energy Issues in Housing. (3) I, S. An examination of current housing issues including conditions, regulations, finance, and policy as they relate to the consumer. Pr.: SOCIO 211, ECON 110, FEC 410. FEC-625-0-1304

FEC 630. Household Equipment Theory. (3) I, S. Analytical study of appliance design, performance, and evaluation concepts for application in consumer decision-making. Not open to students with credit in FEC 440. Six hours rec. and lab a week. Pr.: Four hours lab science course. FEC-630-1-1302

FEC 650. Consumer Product Safety. (3) I. Evaluation of measures that assure consumer public of safe products, consumer recourse, business protection and responsibility, methods of surveillance, investigation, and reporting. Pr.: Ten hours of 400 or higher level courses in engineering or home economics. FEC-650-0-1304

FEC 660. Kitchen and Utility Area Planning. (3) II. Functional and research basis for planning and arranging based on activity analysis, equipment, materials, lighting, and ventilation. Two hours lec. and two hours lab a week. Pr.: FEC 460 or ID 240 or ARCH 261. FEC-660-1-1302

FEC 670. Field Study in Family Economics. (Var.) I, II, S. Supervised experiences with community action programs and consumer services in industry and government agencies. May be taken more than one semester. Pr.: FEC 400, 460, or consent of department head. FEC-670-2-1304

FEC 680. Seminar in Family Economics. (1-3) I, II, S. A review of research literature; trends in the field of family economics; the contribution of the area to the family and community. Pr.: Senior or graduate standing. FEC-680-0-1304

FEC 700. Families in the American Economy. (3) I. Study of the interrelation of the national economy and the family, family incomes and expenditures, cost of living estimates, measures of family welfare, public policies affecting family welfare and standards of living. Pr. or conc.: ECON 110. FEC-700-0-1304

FEC 705. Financial Problems of Families. (3) I. Financial problems confronting families, primarily of the middle-income

classes; study of insurance, credit, savings, and estate planning as they relate to family living. Pr.: FEC 405. FEC-705-0-1304

FEC 710. Consumer Marketing Programs and Policies. (3) II. In alternate years. Review of consumer marketing programs and policies of education, business, and government as they bear upon consumer decision-making in the market. Pr.: FEC 605 or equiv. FEC-710-0-1304

FEC 712. Family Financial Counseling. (3) II. Analyses of specific financial problems of families seeking counsel from cooperating agencies. Pr.: FEC 705 or conc. enrollment. FEC-712-0-1304

FEC 713. Financial Counseling Practicum. (1-4) I, II, S. Financial counseling in the Family Center or with a cooperating agency or business. Pr.: FEC 712 or conc. enrollment. Placement contingent on staff approval. FEC-713-2-1304

FEC 720. Housing Requirements of Families. (3) II. Housing needs and requirements of families as influenced by social norms, societal values, family activities and preferences, and economic and political constraints. Pr.: FEC 420. FEC-720-0-1304

FEC 740. Advanced Household Equipment. (3) II. Application of basic electrical, optical, refrigeration, heat transfer, psychometric, and detergent chemistry principles to the study of household equipment, with emphasis on techniques and instrumentation for consumer testing. Six hours rec. and lab a week. Pr.: FEC 440, PHYS 115; senior or graduate standing. FEC-740-1-1304

FEC 760. Management of Family Resources. (3) II. Identifying and analyzing problems of management in the home which affect the needs of individuals and create a satisfying environment for the family. Pr.: FEC 460 and consent of instructor. FEC-760-0-1304

FEC 780. Problems in Family Economics. (Var.) I, II, S. Individual investigation in standards of living and family expenditures; housing and household equipment; time and motion study; and use of family resources. Pr.: Consent of instructor. FEC-780-3-1304

Graduate credit

FEC 811. Consumer Education. (3) S. Evaluate syllabi and approaches to teaching consumer economics and consumer affairs. Pr.: FEC 400 or consent of instructor. (See EDAO 811.) FEC-811-0-1304

FEC 815. Advances in Consumer and Family Economics. (3) II. In alternate years. Critical analysis of research in consumer and family economics. Possible topics include economic analysis of consumption decisions, labor force participation, and effects of public policies on families. Pr.: FEC 605 and 700. FEC-815-0-1304

FEC 825. Social Effects of the Housing Environment. (3) II. A critical analysis of the literature on the social influences on the family and the individual attributable to the nature of the housing and neighborhood environment. Alternative physical determinist and socio-cultural interpretations are developed. Pr.: FEC 420. FEC-825-0-1304

FEC 840. Experimental Methods in Household Equipment. (2) I. In alternate years. Philosophy of household equipment evaluation and experimentation; emphasis upon instrumentation, selection of variables, and data analysis. Pr.: A course in statistics, FEC 740. FEC-840-1-1302

FEC 860. Advanced Home Management. (Var.) In alternate years. Review of current research in management, administration, decision-making, goal evaluation, and problems of families handicapped by low income, physical disability, or age. Pr.: FEC 465. FEC-860-0-1304

FEC 894. Readings in Family Economics. (1-3) I, II. Selected review of literature in family economics, housing, consumer finance, consumer economics, home management, household equipment, consumer product safety, and the consumer movement. Pr.: FEC 400 or FEC 700, six hours of social science and consent of department head. May be taken more than once. FEC-894-3-1304

FEC 899. Research in Family Economics. (Var.) I, II, S. Individual research problems which may form the basis for the master's thesis. Pr.: Consent of instructor. FEC-899-4-1304

FEC 920. Housing Economics. (3) II, S. Analysis of economic research related to consumer and government decisions about housing, including financing, regulation, subsidy programs, energy conservation, and choice of characteristics. Pr.: ECON 520, course in statistics, two courses in housing, urban economics, or planning. FEC-920-0-1304

FEC 999. Research in Family Economics. (Var.) I, II, S. Pr.: Consent of major professor. FEC-999-4-1304

Foods and Nutrition

Jane Raymond Bowers,* head of department

Professors Bowers* and Fryer;* Adjunct Professors Lookhart* and Ranhotra;* Associate Professors Newell,* Reeves,* Setser,* and Zayas;* Assistant Professors Grunewald,* Harbers,* Smith,* and Stone;* Instructor Freund; Emeriti: Professors Caul, Harrison,* and Tinklin.*

The Department of Foods and Nutrition provides three options and interdepartmental programs which provide specialized instruction for students.

Undergraduate study

Three programs lead to a bachelor's degree in foods and nutrition: foods and nutrition in business-community service; foods and nutrition science; and nutritional sciences. Students prepare for business or community service under the first option. Students interested in food science and nutrition select the second option. Students prepare for medical and dental schools and nutrition-related professions under the third option. Basic courses in foods and nutrition are offered for students in other areas of home economics and in other colleges of the University.

A foods and nutrition practicum is available for students to gain experience in the business field or in community nutrition and public health.

Foods and nutrition cooperates with the Department of Dietetics, Restaurant and Institutional Management in the four-year undergraduate coordinated program in dietetics leading to a B.S. degree and membership in the American Dietetic Association.

Students wishing to fulfill requirements of the Institute of Food Technologists may choose the science option of the curriculum in food science and industry (with a Bachelor of Science in Food Science and Industry). This is an interdepartmental program involving the departments of foods and nutrition, animal sciences and industry, grain science and industry, and horticulture.

Graduate study

M.S. and Ph.D. programs are offered by the department. Research and teaching laboratories provide students with excellent equipment. Fellowship and research and teaching assistantships are available to some qualified students.

The Department of Foods and Nutrition is a participating member of the graduate program in food science leading to M.S. and Ph.D. degrees.

Foods and nutrition in business-community service

Bachelor of Science in Foods and Nutrition

Studies involve business, communication, and community health aspects of foods and nutrition.

Liberal-general education courses (51-52 hours)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
ECON 110	Economics I	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3
BIOCH 201	Elementary Biochemistry	3
BIOL 198	Principles of Biology	4
BIOL 240	Human Body	6
BIOL 555	Microbiology	5
CHM 110	General Chemistry	5
CHM 190	Elementary Organic Chemistry	3
	with	
CHM 191	Elementary Organic Chemistry Lab	2
MATH 100	College Algebra	3
	or	
MATH 220	Analytic Geometry & Calculus I	4
	Humanities electives (minimum)	3

Home economics core (14-15 hours)

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 133	Food for Man	3
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Choose one of the professional areas:

Business-communication area

JMC 630	Public Relations	3
MKTG 400	Marketing	3
	Business and/or communications electives	12-13
FN 300	Food Preparation & Meal Management	4
FN 301	Trends in Food Products	3
FN 501	Food Science	3
FN 502	Principles of Nutrition*	3
FN 610	Nutritional Needs Throughout the Life Cycle	3
FN 616	Principles of Foods Demonstration	3
FN 680	Seminar in Foods and Nutrition	2
FN 790	Food Research Techniques	3
	Foods and nutrition or related electives	6

Community nutrition area

STAT 320	Elements of Statistics	3
EDAF 215	Educational Psychology I	3
MANGT 420	Management Concepts	3
	Specified family & child development, family economics, and/or physical education electives	9
FN 300	Food Preparation & Meal Management	4
FN 301	Trends in Food Products	3
FN 501	Food Science	3
FN 502	Principles of Nutrition*	3
FN 600	Practicum in Foods & Nutrition	3
FN 680	Seminar in Foods & Nutrition	2
FN 700	Community Nutrition	3
FN 610	Nutrition Needs Throughout the Life Cycle	3
FN 712	Diet Therapy	3
DRIM 440	Quantity Foods	5

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (7-11 hours)

Total hours for graduation 125

*If taken in home economics core, take foods and nurition elective.

Foods and nutrition science

Bachelor of Science in Foods and Nutrition

Studies involve research, testing, and development. Students will be well prepared for graduate study.

Liberal-general education courses (42-43 hours)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
ECON 110	Economics I	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3
BIOL 198	Principles of Biology	4
BIOL 240	Human Body	6
BIOL 555	Microbiology	5
MATH 100	College Algebra	3
	or	
MATH 220	Analytic Geometry & Calculus I	4
	Humanities electives	3
PHYS 115	Descriptive Physics	4

Home economics core (14-15 hours)

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Supporting courses

BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Lab	2
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 271	Chemical Analysis	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Lab	2

Professional courses

FN 300	Food Preparation & Meal Management	4
FN 301	Trends in Food Products	3
FN 501	Food Science	3
FN 502	Principles of Nutrition*	3
FN 610	Nutritional Needs Throughout the Life Cycle	3
FN 680	Seminar in Foods & Nutrition	2
FN 790	Food Research Techniques	3
	Nutrition electives	3
	Foods & nutrition electives	6

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (14-16 hours)

Total hours for graduation 125

*If taken in the home economics core, take foods and nutrition elective.

Food science and industry

Science option—joint program with College of Agriculture and College of Home Economics

Bachelor of Science in Food Science and Industry

Students wishing to fulfill the requirements for the Institute of Food Technologists may choose this option. Food scientists are concerned with the theoretical and practical aspects of the food industry from production of the raw material through acceptance of the finished product. The curriculum, designed to educate individuals in the discipline of food science, balances fundamental principles and applications of food theory within a flexible program that permits students to tailor educational choices to fit personal career goals.

General courses

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
ECON 110	Economics I	3
PE 101	Concepts in Physical Education	1
GNHE 120	Dimensions of Home Economics	1-2

Social science and humanities (9 hours)

Mathematics (9 hours)

MATH 100	College Algebra	3
MATH 205	General Calculus & Linear Algebra	3
	or	
MATH 210	Technical Calculus I	3
STAT 340	Biometrics	3

Biological science (9 hours)

BIOL 198	Principles of Biology	4
BIOL 555	Microbiology	5

Physical science (30 hours)

CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350/351	General Organic Chemistry with Lab	5
BIOCH 521/ 522	General Biochemistry with Lab	5
CHM 271	Chemical Analysis	4
PHYS 113/ 114	General Physics I and II	8

Professional courses (33-37 hours)

ASI 302	Introduction to Food Science	3
ASI 410	Food Analysis	3
ASI 311	Introduction to Food Chemistry	3
ET 440	Introduction to Food Engineering Technology	4
BIOL 520	Microbiology of Foods	4
ASI 695	Quality Assurance	3
	or	
GRSC 651	Food & Feed Plant Sanitation	4
FN 502	Principles of Nutrition	3
GENAG 500	Food Science Seminar	1
ASI 305	Fundamentals of Food Processing	3
	Plus two lab courses (6-9 hours) from the list of processing electives.	

A minimum of 13 hours selected from any of the courses listed below.

Professional electives

FN 501	Food Science	3
FN 612	Principles of Food Product Development & Control	3
CMPSC 200/20-	Fundamentals of Computer Programming with Lab	4
ASI 694	Food Plant Management	2
GRSC 661	Qualities of Feed & Food Ingredients	3
FN 301	Trends in Food Products	3
FN 750	Nutrition Aspects of Food Processing & Preparation	3
FN 790	Food Research Techniques	3
GRSC 602	Cereal Science	3
HORT 792	Handling & Processing of Fruits & Vegetables	3
GRSC 120	Introduction to Bakery Technology	2
ASI 630	Egg Science	2
ASI 635	Poultry Meat Technology	2

Processing electives

ASI 250	Principles of Meat Science	2
ASI 261	Meat Processing	2
ASI 725	Meat Packing Plant Operations	2-6
ASI 777	Meat Technology	4
ASI 405	Fundamentals of Milk Processing	3
ASI 502	Principles of Dairy Food Processing	4
ASI 100	Principles of Milling	3
GRSC 635/ 636	Baking Science I with Lab	4
GRSC 637/ 638	Baking Science II with Lab	3
ET 640	Food Processing Operations	5
ASI 430	Food Products Evaluation	3
FN 620	Sensory Analysis of Foods	3
ASI 550	Dairy Bacteriology	4
ASI 711	Food Fermentation	4
GRSC 625	Flour & Dough Testing	3
ASI 671	Meat Selection & Utilization	3

Business electives

AGEC 511	Consumption Economics in Agriculture	3
AGEC 514	Economics of Food Marketing	3
AGEC 518	Economic Principles of Business Firms	3

AGEC 520	Grain Marketing	3
AGEC 521	Livestock & Meat Marketing	3
ASI 694	Food Plant Management	2
ECON 120	Economics II	3
ACCTG 211	Financial Accounting	3
ACCTG 221	Managerial Accounting	3
FINAN 450	Business Finance	3
MANGT 202	Small Business Operations*	3
MANGT 390	Business Law I	3
MANGT 420	Management Concepts	3
MANGT 421	Production Management	3
MANGT 530	Labor Legislation	3
MANGT 531	Personnel & Wage Administration	3
MKTG 400	Marketing	3
MKTG 450	Consumer Behavior	3
MKTG 541	Retailing	3
MKTG 542	Sales Management	3
MKTG 640	Marketing Research	3
MKTG 641	Business Logistics	3

*Offered on sufficient demand.

Unrestricted electives (6-11 hours)

Total hours for graduation 127

Nutritional sciences

Bachelor of Science in Foods and Nutrition

Students may fulfill pre-medical or pre-dental school requirements through this program. Graduates are well prepared for graduate work.

Liberal-general education courses (49-50 hours)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
PSYCH 110	General Psychology	3
ECON 110	Economics I	3
SOCIO 211	Introduction to Sociology	3
	Humanities	3
BIOL 198	Principles of Biology	4
BIOL 240	Human Body	6
BIOL 555	Microbiology	5
MATH 100	College Algebra	3
MATH 150	Trigonometry	3
	or	
MATH 220	Calculus I (required for pre-med)	4
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4

Home economics core (10-11 hours)

GNHE 120	Dimensions of Home Economics	1-2
	or	
GNHE 400	Home Economics Seminar	1
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 502	Principles of Nutrition	3

Supporting courses (27 hours)

CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 271	Chemical Analysis	4
CHM 531	Organic Chemistry I	3
CHM 532	Organic Chemistry I Lab	2
CHM 550	Organic Chemistry II	3
CHM 551	Organic Chemistry II Lab	2
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Lab	2

Professional courses (27 hours)

FN 300	Food Preparation & Meal Management	4
FN 301	Trends in Food Products	3
FN 501	Food Science	3
FN 610	Nutritional Needs Throughout the Life Cycle	3
FN 680	Seminar in Foods & Nutrition	2
FN 700	Community Nutrition	3
FN 710	Bionutrition	3
FN 712	Diet Therapy	3
FN	Elective	3

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (9-11 hours)*

Courses below are suggested; other may be chosen.

Physical science

MATH 150	Plane Trigonometry	3

Humanities

PHILO 565	Medical Ethics	3
HIST 520	Death and Dying in America	3

Biological sciences

BIOL 400	Human Genetics	3
BIOL 440	Cell Biology	3
BIOL 505	Comparative Anatomy of Vertebrates	4
BIOL 510	Embryology	3
BIOL 511	Embryology Lab	1
BIOL 545	Human Parasitology	3
BIOL 546	Human Parasitology Lab	1

To meet ADA academic requirements

MANGT 420	Managements Concepts	3
EDAF 315	Educational Psychology	3
STAT 320	Elements of Statistics	3
	or	
STAT 340	Biometrics	3

Total hours for graduation 125

Courses in foods and nutrition
Undergraduate credit

FN 132. Basic Nutrition. (3) I, II, S. Fundamentals of human nutrition as they relate to health and well-being of individuals. Nutritional requirements over the lifespan. Not open to students in Foods and Nutrition, Dietetics and Institutional Management, Home Economics Education, or Home Economics Extension. FN-132-0-1306

FN 133. Food for Man. (3) I. Food production, distribution, significance, and consumption. Nutritional status of world population and local, national, and international programs for improvement of nutritional status. FN-133-I-1306

FN 300. Food Preparation and Meal Management. (4) I, II. Principles of food preparation; selection and evaluation of food products; meal service with emphasis on nutritional adequacy, aesthetics, and management of resources. Two hours rec. and six hours lab a week. FN-300-I-1306

FN 301. Trends in Food Products. (3) II. Current trends in utilization, consumption, preservation, and market forms of various foods. Food laws, regulation, additives, labeling, and packaging. FN-301-0-1306

FN 499. Problem in Foods and Nutrition. (Var.) I, II, S. Supervised individual project to study current topics or opportunity to participate in research in foods and nutrition. Pr.: Six hours in FN and consent of instructor. FN-499-3-1306

Undergraduate and graduate credit in minor field

FN 501. Food Science. (3) I, II. Basic scientific principles associated with preparation of foods as related to their chemical and physical properties. Two hours rec. and three hours lab a week. Pr.: CHM 190 and 191 or 350 and 351, or BIOCH 120; and FN 300. FN-501-1-1306

FN 502. Principles of Nutrition. (3) I, II. Functions and interrelationships of various nutrients in the body. Two hours rec. and three hours lab a week. Pr.: CHM 190 and 191, or 350 and 351, or BIOCH 120; and BIOL 198. FN-502-1-1306

FN 510. Nutrition for Elementary and Middle Level Teachers. (2-3) I. Nutrition information related to contemporary nutrition concerns and applied to the evaluation of diets and nutrition education resources. Pr.: Senior standing. FN-510-0-1306

FN 511. Introduction to Clinical Dietetics. (1) I, II. Supervised hospital experience in clinical dietetics. Must be taken concurrently with FN 712. Open only to students in Coordinated Undergraduate Program in Dietetics. Pr.: FN 502, BIOCH 201, BIOL 240, consent of instructor. FN-511-2-1306

FN 513. Applied Normal Nutrition. (3) I, II. Principles of normal nutrition applied in the hospital and community to the care of children, adults, and the aged. Professional role of dietitians and techniques of communication. Two credits recitation, one credit of supervised experience. Pr.: BIOCH 201, BIOL 240, FN 511, FN 610, consent of instructor. Taught in Wichita. FN-513-2-1306

FN 514. Nutrition in Medical Science. (6) I, II. Principles of therapeutic nutrition applied in the care of children, adults, and the aged. Three credits recitation and three credits of supervised experience. Pr.: BIOCH 201, BIOL 240, FN 511, FN 610, consent of instructor. Taught in Wichita. FN-514-2-1306

FN 515. Nutritional Care of Patients. (6) I, II. Supervised experience in the nutritional care of children, adults, and the aged. One credit recitation and five credits of supervised experience. Pr.: BIOCH 201, BIOL 240, FN 511, FN 610, consent of instructor. Taught in Wichita. FN-515-2-1306

Undergraduate and graduate credit

FN 600. Practicum in Foods and Nutrition. (3-5) I, II, S. Supervised professional field experience in foods and nutrition. Graduate students may enroll for a maximum of three credits. Pr.: FN 501, 502, and consent of instructor. FN-600-2-1306

FN 603. Maternal and Child Nutrition. (2-3) II. A study of the principles of prenatal, infant, and child nutrition emphasizing the practical application to life situations. Pr.: FN 132, BIOL 198 or consent of instructor. FN-603-0-1306

FN 610. Nutrition Needs Throughout the Life Cycle. (3) I, II. Food patterns, dietary intakes and nutritional requirements of infants, children, adolescents, and adults. Pr.: BIOCH 120 or 201 or 521, BIOL 240 or 526. FN-610-0-1306

FN 612. Principles of Food Product Development and Control. (3) II. Food product concept, feasibility, and evaluation. Pr.: FN 501 or consent of instructor. FN-612-0-1306

FN 616. Principles of Food Demonstration. (3) II. Fundamentals in food demonstrations used by the teacher, home economics agent, and commercial demonstrator. Six hours lab a week. Pr.: FN 132 or 502 and 501. FN-616-1-1306

FN 620. Sensory Analysis of Foods. (3) II. In alternate years. Sensory analysis of food appearance, texture, aroma, flavor; physiology of sensory receptors; application of laboratory and consumer panels; and interpretation of data. Two hours rec. and two hours lab a week. Pr.: FN 501. FN-620-1-1306

FN 635. Nutrition and Exercise. (3) II. In alternate years. The interrelationships among diet, nutrition, and exercise. Topics covered include physical fitness, weight control, nutrient metabolism during exercise, and athletic performance. Pr.: FN 132 or FN 502 and PE 335. (Crosslisted with College of Arts and Sciences, see PE 635.) FN-635-0-1306

FN 680. Seminar in Foods and Nutrition. (2) I. Individual reports and discussion of current topics in foods and nutrition. Pr.: FN 501 and 502. FN-680-0-1306

FN 700. Community Nutrition. (3) I. Factors in the community influencing nutritional status, techniques to assess community nutritional needs, methodology for implementing and evaluating community nutrition programs. Pr.: FN 603 or 610. FN-700-0-1306

FN 702. Nutrition in Developing Countries. (3) I. Nutritional problems in developing countries including an analysis of factors which contribute to malnutrition, effects of undernutrition, methods for assessing nutritional status, and interventions designed to combat nutrition problems. Pr.: FN 603 or 610. FN-702-0-1306

FN 710. Bionutrition. (3) II. Nutrient interrelationships based on knowledge of biochemical and physiological processes, functions of specific nutrients and evaluation of nutritional status. Pr.: BIOCH 521, BIOL 526 and FN 502. FN-710-0-1306

FN 712. Diet Therapy. (3) I, II. Dietary modifications for pathological conditions. Pr.: FN 502, BIOCH 201 or 521, BIOL 240 or AP 530 or BIOL 526. FN-712-0-1306

FN 720. Food Systems. (3) II. Chemical and physical principles of food components; emulsions and colloidal food systems. Two hours lec. and three hours lab a week. Pr.: BIOCH 521, FN 501. FN-720-0-1306

FN 750. Nutritional Aspects of Food Processing and Preparation. (2-3) I. In alternate years. Stability of nutrients during processing, storage, and preparation of foods from raw food to products for human consumption. Pr.: FN 501 and 502, BIOCH 200 or 521. FN-750-0-1306

FN 760. Fundamentals of Food Flavor Analysis. (3) I. In alternate years. Flavor perception considered from both the human senses of taste, feeling, and smell and the chemical and physical attributes of food; practical bases for reliable sensory measurement. One hour lec. and six hours lab a week. Pr.: CHM 190, 350, or 550; FN 501. FN-760-1-1306

FN 780. Problems in Foods and Nutrition. (Var.) I, II, S. Laboratory and library experience in current problems in foods and nutrition. Three hours lab a week for each hour of credit. Pr.: FN 501 or 502. FN-780-3-1306

FN 782. Topics in Foods and Nutrition. (1-3) On sufficient demand. May be taken more than once for a maximum of six

hours. Pr.: Senior standing and consent of instructor. FN-782-0-1306

FN 790. Food Research Techniques. (3) I. Fundamental principles of food quality evaluation and development of an independent research problem. Pr.: FN 501. FN-790-1-1306

Graduate credit

FN 811. Advances in Foods. (1-3) S. Recent developments and concerns related to foods. Pr.: FN 501 and consent of instructor. FN-811-0-1306

FN 813. Advances in Nutrition. (1-3) S. Recent developments and concerns related to nutrition. Pr.: FN 502 and consent of instructor. FN-813-0-1306

FN 815. Practicum in Community Nutrition. (3) I, II, S. Supervised experience in community nutrition agencies. Pr.: FN 700. FN-815-2-1306

FN 816. Application of Food Flavor Analysis. (2) II. On sufficient demand. Application of flavor panel analysis to food research problems. One hour lec. and two hours lab a week. Pr.: FN 760. FN-816-1-1306

FN 817. Nutrition and Aging. (2-3) S. Nature of aging process, nutritional requirements, food habits, and effect of nutrition on the rate of biological aging. Pr.: Nine hours of nutrition, BIOL 526 and BIOCH 521. FN-817-0-1306

FN 818. Fundamentals of Meat Processing and Preparation. (1-2) S. On sufficient demand. Inspection, grading, processing, and preparation in relation to chemical and physical characteristics, costs, safety, quality, and palatability of red meat. Pr.: FN 501 and conc. enrollment in ASI 818. FN-818-1-1306

FN 880. Graduate Seminar in Foods and Nutrition. (1) II. Discussion of investigations in foods and nutrition. May be taken four semesters for credit. Pr.: FN 790 and 610. FN-880-0-1306

FN 890. Readings in Foods and Nutrition. (Var.) I, II, S. Reports and discussions on current research and literature in foods and nutrition and allied areas. Pr.: Consent of instructor. FN-890-3-1306

FN 898. Master's Report. (Var.) I, II, S. Survey in depth of the literature. FN-898-4-1306

FN 899. Master's Thesis. (Var.) I, II, S. Research in area of specialization. FN-899-4-1306

FN 905. Lipids in Food Systems. (2) S. In alternate years. Physical and chemical characteristics of lipids with emphasis on their behavior and function in food systems. Pr.: BIOCH 521 and FN 720. FN-905-0-1306

FN 906. Proteins in Food Systems. (2) S. In alternate years. Behavior and function of plant, animal, and nonconventional proteins in food systems. Pr.: BIOCH 521 and FN 720. FN-906-0-1306

FN 907. Food Dispersions. (2) I. In alternate years. Properties of food dispersions: food sols, food gels, emulsions and foams including batters and doughs. Pr.: FN 720. FN-907-0-1306

FN 908. Carbohydrates in Food Systems. (2) II. In alternate years. Properties and functions of sugars, starches and characteristics of edible plant tissues and pigments. Pr.: FN 720. FN-908-0-1306

FN 910. Advanced Nutrition: Carbohydrates and Lipids. (2) II. In alternate years. Nutritional roles and metabolism of carbohydrates and lipids in normal and abnormal physiological states. Pr.: BIOCH 521, BIOL 526, and FN 710. FN-910-0-1306

FN 911. Advanced Nutrition: Proteins and Amino Acids. (2) I. In alternate years. Nutritional roles and metabolism of proteins and amino acids. Functions, protein quality assessment, digestion and absorption, hormonal regulation, requirements and interrelationships with other nutrients. Pr.: BIOCH 521, BIOL 526 and FN 710. FN-911-0-1306

FN 912. Advanced Nutrition: Minerals. (2) I. In alternate years. Nutritional roles and metabolism of minerals. Functions, biological availability, hormonal regulation, requirements, deficiency and toxicity signs, and interrelations with other nutrients. Pr.: BIOCH 521, BIOL 526 and FN 710. FN-912-0-1306

FN 913. Advanced Nutrition: Vitamins. (2) II. In alternate years. Nutritional roles and metabolism of vitamins. Functions, requirements, anti-vitamins, and deficiency and toxicity signs. Pr.: BIOCH 521, BIOL 526, and FN 710. FN-913-0-1306

FN 981. Food Science Colloquium. (1) I. Discussion of investigations in food science. Attendance required of all graduate students in food science. Maximum of two hours may be applied toward an M.S. degree or four hours toward a Ph.D. degree. FN-981-0-1306

FN 999. Research in Foods and Nutrition. (Var.) I, II, S. Three hours a week for each hour of credit. Pr.: Consent of instructor. FN-999-4-1306

General Home Economics

Professors Stowe and Huyck;* Instructors Pence and Sego.

The general home economics areas combine a comprehensive home economics preparation with a specialty area in education, extension, mass communication, or other supporting area of the student's choice. Five programs are cooperatively planned with the general home economics faculty and other faculty from the Cooperative Extension Service, home economics education, and mass communication.

General home economics

Bachelor of Science in Home Economics

General home economics prepares home economists with a comprehensive selection of courses in: clothing, textiles, and interior design; family and child development; family economics; and foods and nutrition. Many students who are undecided about a choice of major will initially major in general home economics while exploring other areas, then select a more specialized major.

Liberal-general education courses (34 hours minimum)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
ECON 110	Economics I	3
PSYCH 110	General Psychology	3

Additional requirements (20 hours)
Four disciplines of humanities and soeial, biological, and physieal sciences shall be represented in liberal-general education and/or supporting courses. (One discipline, not represented in supporting courses, shall include 8-12 credit hours, with two courses in sequence plus one additional course.)

CHM 110	General Chemistry	5
CHM 190	Elementary Organic Chemistry	3
CHM 191	Elementary Organic Chemistry Lab	2
	or	
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Lab	2
	Biological science eleetive	
	Social science elective	
	Humanities elective	

Supporting courses (18-20 hours)

ART 100	Design I	2

Other courses to be selected in consultation with advisor 16-18

Home economics core (14-15 hours)

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economies	3
FN 132	Basic Nutrition	3
	or	
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (13-18 hours)

Home economics courses (40-42 hours)
Clothing and textiles (9 hours)

CT 131	Clothing & Society*	3
	or	
CT 440	Socio-Psyehological Aspects of Clothing*	3
	or	
ID 101	Design for Contemporary Living (if not taken in the eore)	3
CT 260	Textiles	3
	or	
CT 150	Principles of Clothing Construction	3
ID 240	Interior Design Studio I	3
	or	
CT 220	Fundamentals of Apparel Design I	3

Family and child development (6 hours)

FCDEV 350	Family Relationships & Sex Roles (if not taken in the core)	3
	or	
FCDEV 352	Coneepts of Personal Health	3
FCDEV 310	The Preschool Child	3
	or	
FCDEV 430	Middle Childhood and	2
FCDEV 431	Middle Childhood Lab	1
	or	
FCDEV 520	The Adolescent and	2
FCDEV 521	The Adolescent Lab	1

Family economics (6 hours)

FEC 405	Personal & Family Finanee	3
FEC 420	Housing	3

Foods and nutrition (10 hours)

FN 300	Food Preparation & Meal Management	4
FN 501	Food Science	3
FN 132	Basic Nutrition**	3
	or	
FN 502	Prineiples of Nutrition**	3
	or	
FN ---	Eleetive in Foods & Nutrition	3

Home economics electives (9-11 hours)

Total hours for graduation 125

*If neither CT 131 nor CT 440 is taken in the core.
**If taken in the core, take foods and nutrition elective.

Home economics extension

Bachelor of Seienee in Home Economics

This program prepares a student to join the Cooperative Extension Servicc for work in a county in Kansas or another state.

The extension service provides educational programs designed to improve the quality of life of individuals and families and to improve communities.

State extension services need personnel with different kinds of competencies. Some positions require a broad background in all subject-matter areas of home economics; some require specialization in one or more closely related home economics subject-matter areas. Coursc work in educational program development and teaching-learning methods and procedures is desirablc.

A student interested in a position with the Cooperative Extension Service may wish to confer with a county, area, or state extension employee to learn about job responsibilities.

Liberal-general education courses (40 hours)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
ECON 110	Economics I	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3
BIOL 198	Principles of Biology	4
CHM 110	General Chemistry	5
CHM 190	Elementary Organic Chemistry	3
	with	
CHM 191	Elementary Organic Chemistry Lab	2
	or	
BIOCH 120	Introduetion to Organie & Bioehemistry	5
	Humanities elective	3
	Additional liberal-general education eleetives*	6

*At least 26 hours among the four diseiplines of humanities, and soeial, biologieal, and physical seiences, and one diseipline shall inelude two eourses in sequence plus one additional eourse to total 8-12 hours.

Home economics core (14-15 hours)

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Professional and supporting courses

ART 100	Design 1	2
EDAO 605	Extension Organization & Programs	3
EDAO 606	Principles of Teaching Adults in Extension	3
CT 150	Principles of Clothing Construction	3
CT 260	Textiles	3
ID 240	Interior Design Studio 1	3
FCDEV 230	Introduction to Human Development*	3
FCDEV 272	Helping Relationships	3
FCDEV 310	The Preschool Child	3
FCDEV 350	Family Relationships*	3
FCDEV 650	The Family	3
FEC 460	Family Resource Management Theory & Application	3
FEC 420	Housing	3
FEC 440	Household Equipment	3
	or	
FEC 630	Household Equipment Theory	2-3
FN 133	Food for Man**	3
	or	
FN 301	Trends in Food Products**	3
FN 300	Food Preparation & Meal Management	4
FN 501	Food Science	3
FN 502	Principles of Nutrition*	3
	Communications electives	2-3

Select 6-7 hours from the following:

EDAO 636	Practicum in Extension Education	5
FCDEV 352	Concepts of Personal Health	3
FEC 405	Personal & Family Finance	3
	or other approved home economics courses	

Physical education

PE 101	Concepts of Physical Education	1

Unrestricted electives (11-15 hours)

Total hours for graduation 125

*If not taken in home economics core.
**If FN 133, Food for Man, is not taken in home economics core.

Home economics and mass communications

Bachelor of Science in Home Economics and Mass Communications

This curriculum provides for a specialization in either the print media or broadcast media. Students take courses in journalism, radio, and television to prepare for careers with newspapers, magazines, radio-television, public relations, promotion and advertising with business and industry or government. A home economics background, plus courses in mass communications, gives graduates in this curriculum a broad base when making a career decision.

Liberal-general education courses (34 hours)

Communications

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2

Social science*

ECON 110	Economics I	3
POLSC 110	Introduction to Political Science	3
	or	
POLSC 325	U.S. Politics	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3

Biological science*
Physical science*
Humanities*
*At least 26 hours among the starred disciplines with one course in each area; and in one area, two courses in sequence plus one other course.

Home economics core (14-15 hours)

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 132	Basic Nutrition	3
	or	
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Professional and supporting courses (61-70 hours)

Home economics courses* (22-26 hours)
Area of concentration (14-16 hours)
Courses selected from at least one area other than concentration (8-10 hours)

Basic disciplines, business administration, and/or education* (9-10 hours)
Courses selected to support home economics areas

Select area "A" or "B"

A. Print media option (30-34 hours)

JMC 235	Survey of Mass Media	3
JMC 275	Reporting I	3
JMC 380	Reporting II	3
JMC 280	Editing I	3

In consultation with your advisor, select the remaining 18-22 hours from one of the following areas:

1. News-editorial area

JMC 480	Editing II	3
JMC 600	Public Affairs Reporting	3
JMC 665	Law of Mass Communications	3

Professional electives in journalism and mass communications (9-13 hours)

2. Magazine Area

JMC 615	Magazine Article Writing	3
JMC 620	Magazine Production	3
JMC 665	Law of Mass Communications	3

Professional electives in journalism and mass communications (9-13 hours)

3. General area

JMC 230	Principles of Advertising	3
JMC 660	History of Journalism	3
	or*	
JMC 685	The Mass Communicator: Ethics & Issues	3
JMC 665	Law of Mass Communications	3

Professional electives in journalism and mass communictions (9-13 hours)

4. Advertising area

JMC 320	Principles of Advertising	3
JMC 640	Public Relations & Advertising Campaigns	3
JMC 545	Advertising Media	3
JMC 555	Ad Copy & Layout	3
JMC 665	Law of Mass Communications	3

Professional electives in journalism and mass communications (3-7 hours)

5. Public relations area

JMC 515	Public Relations	3
JMC 635	Public Information Methods	3
JMC 640	Public Relations & Advertising Campaigns	3
JMC 665	Law of Mass Communications	3

Professional electives in journalism and mass communications (6-10 hours)

B. Radio-TV option (31-36 hours)

RTV 230	Radio-TV & Society	3
JMC 235	Survey of the Mass Media	3
RTV 240	Fundamentals of Radio-TV Production	3
RTV 260	Radio-TV Continuity	3
JMC 275	Reporting I	3
RTV 330	Reporting II (Radio-TV)	3
RTV 665	Radio-TV Regulations & Responsibility	3

Remaining 10-13 hours selected from the following course groupings in consultation with advisor.

Group I (4-9 hours)
(Students may take not more than four hours of participation course and not more than three hours in either course.)

RTV 320	Fundamentals of Radio-TV Performance	3
RTV 455	KSDB-FM Participation	1
RTV 475	TV Participation	1
RTV 340	Intermediate Radio Production	3
RTV 350	Intermediate TV Production	3

Group II (3-9 hours)

RTV 660	History of Broadcasting	3
RTV 665	Radio-TV Regulation & Responsibility	3
RTV 630	Radio-TV Programming	3
RTV 685	Radio-TV Management	3

Group III (3-9 hours)

JMC 320	Principles of Advertising	3
RTV 675	Radio-TV Criticism	3
RTV 610	Entertainment Script Writing	3
RTV 615	Documentary Script Writing	3
RTV 620	Radio-TV Advertising	3

Remaining hours in journalism and mass communications may include any radio-TV and journalism and mass communications courses provided the student does not exceed the maximum for Group I, II, or III. (Minimum 31 hours, maximum 36 hours within journalism and mass communications.)

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (5-15 hours)

Total for graduation 125

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*Selected in consultation with faculty advisor.

Home economics with liberal arts

Bachelor of Science in Home Economics

This curriculum is for the student who wishes to combine a broad liberal arts education withh home economics. Maximum flexibility is provided for the selection of courses best suited to individual abilities and interests. The student in consultation with a faculty advisor selects a sequence of courses for concentration in one or more academic areas. This curriculum provides excellent background for professional careers, graduate study, and the responsibilities of homemaking and citizenship.

Liberal-general education courses (64-67 hours)

Communications

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2

Social Science

ECON 110	Economics I	3
PSYCH 110	General Psychology	3
	Electives in social science	6

Humanities

Philosophy, mathematics, logic	3
Literature or history	6
Electives in humanities	8-9

Physical science	8-10
Biological science	7

Concentration in either modern language, social sciences, natural sciences, or humanities 12

Home economics (34-35 hours)

GNHE 120	Dimensions of Home Economics	1-2
CT 131	Clothing & Society	3
	or	
CT 440	Socio-Psychological Aspects of Clothing	3
	or	
ID 101	Design for Contemporary Living	3
FCDEV 230	Introduction to Human Development	3
	or	
FCDEV 350	Family Relationships	3
FEC 400	Family Economics	3
FN 132	Basic Nutrition	3
	or	
FN 133	Food for Man	3
	or	
FN 502	Principles of Nutrition	3
GNHE 400	Home Economics Seminar	1

Courses in home economics in one of the following areas of concentration 20

a. Clothing, textiles, and interior design. CT 131 or 440 (3),* CT 260 (3), courses in clothing, textiles, and interior design, and related areas in home economics (14-17).

b. Family and child development: FCDEV 310 (3), FCDEV 350 (3),* FCDEV 650 (3), courses in family and child development and related areas in home economics (11-14).

c. Family economics: FEC 405 (3), FEC 460 (3), FEC 605 (3), courses in family economics and related areas in home economics (11).

d. General home economics: FN 132 or FN 502 (3),* FEC 460 (3), FCDEV 310 (3) and selected home economics courses (11-14).

Physical education

PE 101	Concepts in Physical Education	1

Unrestricted electives (22-26 hours)

Total for graduation 125

*If not taken in the home economics core.

Vocational home economics education

Bachelor of Science in Vocational Home Economics Education

This curriculum prepares the student for teaching home economics in Kansas secondary schools. With a Bachelor of Science degree in Vocational Home Economics Education and additional certification requirements,* the student will be certified to teach vocational home economics. In addition, the State Department of Education is currently considering administering a certification examination. Inquiries may be directed to the Office of Student Personnel Services, College of Education, Bluemont 013.

Refer to the College of Education section.

*Due to recent changes in certification requirements students will need to plan to take Pre-Professional Laboratory Experience (EDAO 510) and a course in the teaching of reading in addition to the courses listed below.

Liberal-general education courses (50 hours minimum)

ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105	Oral Communication I	2
ECON 110	Economics 1	3
PSYCH 110	General Psychology	3
SOCIO 211	Introduction to Sociology	3
POLSC 110	Principles of Political Science	3
	or	
POLSC 325	U.S. Politics	3
	Social science electives	3
ART 100	Design I	2
BIOL 198	Principles of Biology	4
CHM 110	General Chemistry	5
CHM 190	Elementary Organic Chemistry	3
	with	
CHM 191	Elemenary Organic Chemistry Lab	2
	or	
BIOCH 120	Introduction to Organic & Biochemistry	5
	Approved literature or language	6
	Liberal-general education electives	5

Home economics core courses*

FCDEV 350	Family Relationships & Sex Roles	3
FEC 400	Family Economics	3
FN 502	Principles of Nutrition	3
GNHE 120	Dimensions of Home Economics	1-2
	or	
GNHE 400	Home Economics Seminar	1

Professional education courses

EDAF 215	Educational Psychology I	3
EDAF 315	Educational Psychology II	3
EDAF 622	Psychology of Exceptional Children	3
	or	
EDAF 623	The Exceptional Child in the Regular Classroom	3
EDAO 586	Teaching Participation in the Secondary School	8
EDAO 550	Methods of Teaching Home Economics	2
EDAO 610	Occupational Home Economics	2
EDAO 620	Principles & Philosophy of Vocational Education	3
EDAO 621	Program Planning in Vocational Education	3
EDAO 637	Practica in Home Economics Related Occupations	1-3
EDAO 611	Coordination of Techniques in Vocational Education**	1
EDAO 612	Occupational Job Analysis**	1
EDCI 316	Introduction to Instructional Media	1

Professional home economics courses

CT 150	Principles of Clothing Construction***	3
CT 260	Textiles	3
ID 240	Interior Design Studio 1	3
FCDEV 310	The Preschool Child	3
FCDEV 311	Preschool Child Lab	1
FCDEV 520	The Adolescent	2
FCDEV 521	The Adolescent Lab	1
FEC 420	Housing	3
FEC 440	Household Equipment	3
	or	
FEC 630	Household Equipment Theory	3
FEC 460	Family Resource Management Theory & Application	3
FN 300	Food Preparation & Meal Management	4
FN 501	Food Science	3

Physical education

PE 101	Concepts of Physical Education	1

Total hours for graduation 125

*This home economics core differs from the basic degree requirements listed earlier.

**These courses may be taken for graduate or undergraduate credit. If taken for graduate credit, the student is required to complete 125 undergraduate hours for the B.S. degree.

***If the course is completed by examination, an additional construction class must be taken.

Graduate programs

Graduate study leading to the master of science degree is offered in general home economics in combination with two or three related areas. Either the thesis, report, or course-work-only plan may be selected for a program of study. The area of general home economics participates in the graduate program for the Ph.D. in home economics.

Home economics education. The College of Home Economics and the College of Education have a cooperative arrangement so that a student who wishes a minor or major in home economics education may plan a graduate program of study to include one or more areas in home economics with emphasis in one area. A student may choose one of three options for a master's degree: thesis; report; or non-thesis or report plan based on course work. Graduate faculty members in home economics education serve as major advisors.

Courses in general home economics
Undergraduate credit

GNHE 120. Dimensions of Home Economics. (1-2) I. Historical development, philosophy, scope, and career choices for home economics. GNHE-120-0-1301

GNHE 208. Home Economics Colloquium. (Var.) I, II, S. Special topics for home economics majors. GNHE-208-2-1301

GNHE 385. Problem in General Home Economics. (Var.) I, II, S. Independent study. Pr.: Consent of instructor. GNHE-385-3-1301

GNHE 399. Honors Seminar in Home Economics. (1) I, II. Selected topics in home economics. May be taken more than once for credit. For students in honors program only. GNHE-399-0-1301

GNHE 400. Home Economics Seminar. (1) I, II. Current issues, professionalism, and place of research in home economics. Pr.: Senior standing or consent of instructor. GNHE-400-0-1301

GNHE 500. Topics in Home Economics. (Var.) I, II, S. Selected issues in Home Economics. May be repeated with change in topic. Pr.: Junior standing. GNHE-500-0-1301

Undergraduate and graduate credit

GNHE 780. Problems in General Home Economics. (Var.) I, II, S. Individual investigation into work in area of general home economics. Pr.: Consent of instructor. GNHE-780-3-1301

Graduate credit

GNHE 860. Contemporary Topics in Home Economics. (1-4) I, II, S. Selected topics in home economics. May be taken more than once with consent of graduate committee. Pr.: Eight hours graduate level home economics courses. GNHE-860-2-1301

GNHE 865. Field Study in Home Economics. (1-6) II. Supervised professional home economics experiences. May be taken more than one semester. Pr.: GNHE 860 or consent of instructor. GNHE-865-2-1301

GNHE 880. Seminar in Home Economics. (1-3) I, II, S. Current research and trends in home economics. May be taken more than once for credit. Pr.: Consent of instructor. GNHE-880-0-1301

GNHE 899. Research in General Home Economics. (Var.) I, II, S. Individual research problems. Pr.: Consent of instructor. GNHE-899-4-1301

GNHE 980. Interdisciplinary Home Economics Seminar. (3) I, II, S. Current research, topics and issues relevant to the home economics profession. Pr.: Enrollment in the Ph.D. program in Home Economics. GNHE-980-0-1301

College of Veterinary Medicine

ANDERSON, NEIL V., Prof. of Comparative Gastroenterology (1967). Clinical Research Scientist. Diplomate, American Col. of Veterinary Internal Medicine, 1972. BS 1953, Mankato St. Col.; BS 1959, DVM 1961, PhD 1968, Univ. of Minn. (GF)

ANTHONY, HARRY D., Prof. and Head of Diagnostic Lab. (1955). Research Pathologist. DVM 1952, MS 1957, Kan. St. Univ. (GF)

BAILIE, WAYNE E., Prof. of Bacteriology (1972). Research Bacteriologist. Diplomate, American Col. of Veterinary Microbiologists, 1980. BS 1957, DVM 1957, PhD 1969, Kan. St. Univ. (GF)

BEEMAN, KEITH B., Assoc. Prof. of Food Animal Medicine (1977). Diplomate, American Col. of Theriogenology, 1981. BS 1958, DVM 1958, Kan. St. Univ.

BLAUCH, BRUCE S., Assoc. Prof. of Small Animal Medicine (1965). BS 1949, Pa. St. Univ.; VMD 1956, Univ. of Pa.; MS 1969, Kan. St. Univ. (GF)

BLECHA, FRANK, Asst. Prof. of Physiology (1981). Research Stress Physiologist. BS 1971, MS 1977, Univ. of Idaho; PhD 1981, Wash. St. Univ. (GF)

BRANDT, GARY W., Asst. Prof. of Equine Medicine (1969). BS 1964, DVM 1966, MS 1971, Univ. of Ill.

BURROUGHS, ALBERT L., Assoc. Prof. of Virology (1960). Research Virologist. BS 1938, Univ. of Wyo.; DVM 1958, Tex. A & M Col.; MS 1941, Mont. St. Col.; PhD 1946, Univ. of Calif. (GF)

BUTLER, HUGH C., Prof. of Surgery (1968). Diplomate, American Col. of Veterinary Surgeons, 1965; BS 1950, DVM 1954, MS 1968, Wash. St. Univ. (GF)

CARNAHAN, DAVID L., Assoc. Prof. of Obstetrics and Gynecology (1961). Diplomate, American Col. of Theriogenology, 1976. BS 1959, DVM 1959, MS 1964, Kan. St. Univ.

CASH, WALTER C., Asst. Prof. of Anatomy (1974). DVM 1971, PhD 1982, Kan. St. Univ.

CHENGAPPA, M. M., Asst. Prof. of Laboratory Medicine (1983). BVSC 1970, MS 1973, Univ. of Agricultural Science, India; PhD 1981, Mich. St. Univ.

CLARENBURG, RUDOLF, Prof. of Physiological Chemistry (1966). Research Physiological Chemist. BS 1954, PhD 1959, St. Univ. of Utrecht. (GF)

COFFEE, E. GUY, Asst. Prof., Veterinary Medicine Library (1970). AB 1958, Univ. of Mo.; ML 1970, Emporia St. Univ.

COFFMAN, JAMES R., Prof. and Head, Department of Surgery and Medicine (1981). Diplomate, American Col. of Veterinary Internists, 1972. BS 1960, DVM 1962, MS 1969, Kan. St. Univ. (GF)

COLES, EMBERT H., JR., Prof. of Laboratory Medicine (1954). Research Clinical Pathologist. DVM 1945, Kan. St. Univ.; MS 1946, Iowa St. Col.; PhD 1958, Kan. St. Univ. (GF)

COOK, JAMES E., Prof. of Pathology (1969). Dir. of Animal Resource Facility. Research Pathologist. Diplomate, American Col. of Veterinary Pathologists, 1956; DVM 1951, Okla. St. Univ.; PhD 1970, Kan. St. Univ. (GF)

DE BOWES, RICHARD M., Asst. Prof. of Equine Medicine (1982). DVM 1979, Univ. of Ill.; MS 1982, Wash. St. Univ.

DENNIS, STANLEY M., Prof. and Head, Department of Pathology. Research Pathologist (1966). Diplomate, American Col. of Theriogenologists, 1975. BVSc 1949, PhD 1961, Univ. of Sydney. FRCVS 1962, FRC Path. 1974. (GF)

EDWARDS, ALVIN J., Assoc. Prof. of Food Animal Medicine (1975). DVM 1959, PhD 1979, Kan. St. Univ.

ERICKSON, HOWARD H., Prof. of Physiology (1981). Research Cardiovascular Physiologist. BS 1957, DVM 1959, Kan. St. Univ.; PhD 1966, Iowa St. Univ. (GF)

FEDDE, M. ROGER, Prof. of Physiology (1964). Research Neurophysiologist. BS 1957, Kan. St. Univ.; MS 1959, PhD 1963, Univ. of Minn. (GF)

FORTNEY, WILLIAM D., Asst. Prof. of Small Animal Medicine (1977). BS 1970, DVM 1974, Univ. of Mo.

FREY, RUSSELL A., Prof. and Head, Department of Anatomy and Physiology (1963). DVM 1952, PhD 1970, Kan. St. Univ. (GF)

FRICK, EDWIN J., Prof. Emeritus of Surgery and Medicine. (1919). DVM 1918, Cornell Univ. (GF)

GABBERT, NATHAN H., Assoc. Prof. of Small Animal Medicine (1973). DVM 1963, Wash. St. Univ.

GARDNER, JAMES D., Adjunct Prof. of Physiology (1979). MD 1971, St. Louis Univ.

GRAY, ANDREW P., Assoc. Prof., Diagnostic Lab. (1964). Research Pathologist. DVM 1953, MS 1963, PhD 1966, Kan. St. Univ.

GUFFY, MARK M., Prof. of Radiology (1963). Diplomate, American Col. of Veterinary Radiology, 1968. DVM 1949, MS 1966, Colo. St. Univ. (GF)

HARTKE, GLENN T., Assoc. Prof. of Anatomy (1962). Research Anatomist. BS 1958, DVM 1960, MS 1965, PhD 1974, Kan. St. Univ. (GF)

HOFFMAN, SHRYLL L., Instr. of Clinical Pathology (1977). BA, MTA-ASCP 1968, Kan. Wesleyan.

HOWARD, DENNIS R., Asst. Prof., Diagnostic Lab. (1972). BS 1972, MS 1976, PhD 1980, Kan. St. Univ. (GF)

JERNIGAN, LOYCE D., Temp. Asst. Prof. of Medicine (1965). DVM 1945, Kan. St. Univ.

JOHNSON, LINDA M., Instr. (1970). BS 1969, Ohio Univ.; MS 1978, Kan. St. Univ.

KEETON, KERRY S., Assoc. Prof. of Clinical Pathology (1977). Research Clinical Pathologist. Diplomate, American Col. of Veterinary Pathologists. BS 1965, DVM 1966, Tex. A & M Univ.; PhD 1971, Univ. of Calif. (GF)

KELLEY, DONALD C., Prof. of Public Health Emeritus (1958). Research Mycologist. Diplomate, American Col. of Veterinary Preventive Medicine. DVM 1935, MS 1952, Kan. St. Univ. (GF)

KENNEDY, GEORGE A., Assoc. Prof. Diagnostic Lab. (1970). Research Pathologist. Diplomate, American Col. of Veterinary Pathologists, 1976. DVM 1967, Wash. St. Univ.; PhD 1975, Kan. St. Univ. (GF)

KIMBALL, ALICE DAY, Instr. in Pathology Emerita (1934). BS 1935, Kan. St. Univ.

KITSELMAN, CHARLES H., Prof. of Pathology Emeritus (1919). VMD 1918, Univ. of Pa.; MS 1927, Kan. St. Univ. (GF)

KLEMM, ROBERT D., Prof. of Anatomy (1972). Research Functional Morphologist. BS 1957, Capital Univ.; MS 1959, Ohio Univ.; PhD 1964, Southern Ill. Univ. (GF)

KRUCKENBERG, SAMUEL M., Prof. of Pathology (1975). Research Pathologist. Diplomate, American Col. of Laboratory Animal Medicine, 1968. DVM 1963, MS 1965, PhD 1971, Kan. St. Univ. (GF)

LAYTON, CANDACE E., Asst. Prof. of Surgery and Medicine (1980). BS 1975, MS 1982, DVM 1977, Kan. St. Univ.

LEASURE, ELDEN E., Dean and Prof. of Pathology Emeritus (1926). DVM 1923, MS 1930, Kan. St. Univ. (GF)

LEIPOLD, HORST W., Prof. of Pathology (1970). Research Pathologist. DVM 1963, Justus Liebig Univ.; MS 1967, PhD 1968, Kan. St. Univ. (GF)

LINDQUIST, WILLIAM D., Prof. of Parasitology Emeritus (1968). Research Parasitologist. BS 1940, MS 1942, Univ. of Idaho; ScD 1949, Johns Hopkins Univ. (GF)

MILLER-DAVIS, PAMELA A., Instr. (1977). BS 1971, MS 1974, Univ. of Mo.

MILLERET, ROY J., Assoc. Prof., Diagnostic Lab. (1960). Research Pathologist. DVM 1944, MS 1959, Kan. St. Univ.

MILLS, KENNETH W., Asst. Prof. (1979). BS 1973, Univ. of Southern Colo.; MS 1976, Colo St. Univ.; PhD 1983, Kan. St. Univ.

MINOCHA, HARISH C., Prof. of Virology (1969). Research Virologist. BVSc 1955, Ind.; MS 1963, PhD 1967, Kan. St. Univ. (GF)

MOORE, WILLIAM E., Prof. and Head, Dept. of Laboratory Medicine (1968). Research Clinical Pathologist. Diplomate, American Col. of Veterinary Pathologists, 1972. BS 1956, DVM 1958, Cornell Univ.; PhD 1968, Univ. of Minn. (GF)

MOSIER, JACOB E., Prof. of Surgery and Medicine (1945). Diplomate, American Col. of Veterinary Internal Medicine, 1972. DVM 1945, MS 1948, Kan. St. Univ. (GF)

NOORDSY, JOHN L., Prof. of Surgery, Asst. Dean (1960). Research Clinical Scientist. BS 1943, S.D. St. Col.; DVM 1946, MS 1962, Kan. St. Univ. (GF)

OEHME, FREDERICK W., Prof. of Toxicology, Medicine and Physiology (1959). Research Toxicologist. Diplomate, American Board of Veterinary Toxicology, 1968. Diplomate, American Board of Toxicology, 1980. BS 1957, DVM 1958, Cornell Univ.; MS 1962, Kan. St. Univ.; Dr. Med. Vet. 1964, Justus Liebig Univ.; PhD 1969, Univ. of Mo. (GF)

PHILIPP, JOSEPH T., Adjunct Prof. of Ophthalmology (1982). MD 1971, Univ. of Kan.

PHILLIPS, ROBERT M., Prof., Diagnostic Lab. (1975). Research Virologist. DVM 1951, Kan. St. Univ.; PhD 1972, Univ. of Ga. (GF)

QUADRI, S. KALEEM, Assoc. Prof. of Physiology (1977). Research Endocrinologist & Reproductive Physiologist. MS 1966, Kan. St. Univ.; MS 1970, PhD 1973, Mich. St. Univ. (GF)

RAILSBACK, LEE T., Prof. of Surgery and Medicine Emeritus (1961). BS 1936, DVM 1937, Kan. St. Univ.

RIDLEY, ROBERT K., Assoc. Prof. of Parasitology (1981). Research Parasitologist. MS 1960, Univ. of Ky.; PhD 1967, Fla. St. Univ., DVM 1978, Kan. St. Univ. (GF)

ROBERTS, CAROLYN V., Instr.; Asst. to the Dean (1977). BS 1955, Univ. of Colo.; MS 1976, Kan. St. Univ.

SAMUELSON, MARVIN L., Assoc. Prof. of Small Animal Medicine (1973). DVM 1956, Kan. St. Univ.

SCHNEIDER, JACOB E., Assoc. Prof. of Equine Medicine (1972). BS 1958, DVM 1960, Colo. St. Univ.

SCHONEWEIS, DAVID A., Assoc. Prof. of Food Animal Medicine (1966). BS 1956, DVM 1956, MS 1971, Kan. St. Univ. (GF)

SCHONING, POLLY, Assoc. Prof. of Pathology (1979). Research Pathologist. Diplomate, Amer. Col. of Vet. Pathologists, 1982. DVM 1964, MS 1970, PhD 1979, Kan. St. Univ. (GF)

SMITH, JOSEPH E., Prof. of Pathology (1969). Research Pathologist. Diplomate, American Col. of Veterinary Pathologists, 1972. BS 1959, DVM 1961, Tex. A & M Univ.; PhD 1964, Univ. of Calif. (GF)

SPIRE, MARK F., Assoc. Prof. of Food Animal Medicine (1976). Diplomate, American Col. of Theriogenology, 1981. DVM 1974, Tex. A & M Univ.; MS 1978, Kan. St. Univ. (GF)

STRAFUSS, ALBERT C., Prof. of Pathology (1968). Research Pathologist. BS 1952, DVM 1954, Kan. St. Univ.; MS 1958, Iowa St. Univ.; PhD 1963, Univ. of Minn. (GF)

TAUSSIG, ROBERT A., Assoc. Prof. of Small Animal Medicine (1966). DVM 1945, Colo. St. Univ.; MS 1970, Kan. St. Univ.

TRAVNICEK, ROBERT G., Adjunct Prof. of Medicine (1979). MD 1965, Univ. of Nebr.

TROTTER, DONALD M., Dean and Prof. of Anatomy (1956). Research Anatomist. Assoc. Dir., Agr. Exp. Sta. Diplomate, American Col. of Veterinary Pathologists, 1951; DVM 1946, MS 1957, Kan. St. Univ. (GF)

UNDERBJERG, GRAVERS K.L., Prof. of Physiology Emeritus (1948). BS 1926, Royal Veterinary and Agricultural Col., Copenhagen; DVM 1943, PhD 1939, Iowa St. Univ. (GF)

UPSON, DAN W., Prof. of Pharmacology (1959). Fellow, American Col. of Veterinary Pharmacology and Therapeutics, 1977. DVM 1952, MS 1962, PhD 1969, Kan. St. Univ. (GF)

VESTWEBER, JEROME G.E., Prof. of Food Animal Medicine (1977). DVM 1964, Univ. of Minn.; MS 1970, PhD 1973, Kan. St. Univ. (GF)

WEINMAN, DONALD E., Assoc. Prof. of Anatomy (1974). Research Anatomist. DVM 1946, Kan. St. Univ.; MSc 1960, PhD 1967, Univ. of Ga. (GF)

WESTFALL, JANE A., Prof. of Microanatomy (1957). Research Neuroscientist. AB 1950, Col. of Pacific; MA 1952, Mills Col.; PhD 1965, Univ. of Calif. (GF)

WILLARD, LLOYD H., Instr., Animal Resource (1972). BS 1970, Kan. St. Univ.

Veterinary Medicine

James R. Coffman,* dean
John L. Noordsy,* assistant dean
Carolyn V. Roberts, assistant to the dean

101 Veterinary Medical Teaching Building
532-5660

General Requirements

Admission

Enrollment in the College of Veterinary Medicine is limited to well-qualified students after a minimum of the required 71 hours of pre-professional courses (see pre-professional requirements). Students are selected from many applicants, with preference given to Kansans. A student must have at least a B (3.0) average over the pre-professional requirements and over the last 45 hours of undergraduate college work in order to be eligible for an interview. A grade below a C in a pre-professional requirement is not acceptable. Non-residents from contract states must meet the same scholastic requirements to receive an application for the professional curriculum and consideration for selection.

Personal interviews are required of all students meeting academic and residency requirements. Selection is based upon academic achievement and professional potential as determined by the interview with the admissions committee. Applicants are evaluated on such items as motivation, maturity, communication skills, experience with and knowledge of animals, and experience with and knowledge of veterinary medicine. Therefore, all students interested in applying to the College of Veterinary Medicine are encouraged to have adequate animal exposure and to have work experience related to veterinary medicine to demonstrate to the admissions committee an understanding of the profession.

Selection for admission to the curriculum in veterinary medicine is on individual merit from qualified applicants as listed above, who are graduates of Kansas high schools and who, with their parents, have maintained residence in Kansas; or who, together with their parents, are residents of Kansas and have been residents for at least three years immediately prior to first semester enrollment of the year for which they are applying; or who have been wholly independent residents of Kansas for five years immediately prior to first semester enrollment of the year for which they are applying. After Kansans are selected, non-residents from states with which KSU has a contract to provide veterinary medical education and who are certified by their state will be selected. Since the contract status may change yearly, interested applicants should contact the assistant dean, College of Veterinary Medicine, for current information regarding contract states.

Non-residents from states having colleges of veterinary medicine will not be considered.

On September 1, applications for admission to the professional curriculum may be obtained from the assistant dean of the College of Veterinary Medicine for consideration in the next class.

No applications are accepted after January 30.

Pre-professional requirements

The pre-professional work may be pursued at Kansas State University in the College of Arts and Sciences or the College of Agriculture or in other academically accredited institutions.

Listed below are required courses, with KSU course numbers listed at left.

Requirements

	Course	Sem. hrs.
ENGL 100	English Composition I	3
ENGL 120	English Composition II	3
SPCH 105 or 106	Oral Communication	2
CHM 210	Chemistry I	4
CHM 230	Chemistry II	4
CHM 350	General Organic Chemistry	3
CHM 351	General Organic Chemistry Laboratory	2
BIOCH 521	General Biochemistry	3
BIOCH 522	General Biochemistry Laboratory	2
PHYS 113	General Physics I	4
PHYS 114	General Physics II	4
BIOL 198	Principles of Biology	4
BIOL 510	Embryology	3
BIOL 511	Embryology Laboratory	1
BIOL 555	Microbiology (with lab)	5
ASI 102	Principles of Animal Science	3
ASI 103	Dairy Science	1
ASI 104	Poultry Science	1
ASI 105	Animal Sciences & Industry	1
ASI 500	Genetics	3
ASI 200	Fundamentals of Nutrition	3
	Social sciences and/or humanities	12
		71

All science courses (chemistry, physics, biology, and genetics) must have been taken within six years of the date of application. All pre-professional requirements must be graded.

A bachelor of science degree may be granted by the College of Agriculture or the College of Arts and Sciences upon completion of residency and academic requirements. Detailed information should be obtained from the dean's office of the appropriate college.

Fees for veterinary medical students

	Resident fees	Non-resident fees
I. Regular semester of 16 weeks or more:		
A. Students enrolled in 7 or more credit hours:		
1. Incidental Fee:		
Undergraduate except veterinary medical students	$450.00	$1290.00
Veterinary Medicine	660.00	1780.00
2. Student Health	55.00	55.00
3. Student Union Repair & Replacement	1.25	1.25
4. Student Union Annex II Bonds	10.25	10.25
5. Stadium Bonds	4.25	4.25
6. Student Coliseum Bonds	16.50	16.50
7. Student Recreational Building Bonds	12.00	12.00
8. Student Recreational Building Program	3.00	3.00
9. Student Activities (including Union operations)	25.25	25.25
Totals—Veterinary Medicine	$800.50	$1920.50

Doctor of Veterinary Medicine curriculum

The curriculum in veterinary medicine at Kansas State University was established to give individuals of this state an opportunity to pursue these studies in an environment where the facilities offered by other branches of the University would be available. To educate the veterinarian to deal with the livestock problems that must be met, the student is required to take courses in livestock feeding, breeding, judging, poultry, milk and dairy inspection, chemistry, bacteriology, parasitology, and zoology, in addition to purely professional work.

Studies must be taken as prescribed. Elective courses may be taken with permission only.

While not required, third year students are encouraged to accept off-campus externships when school is not in session.

See the Graduate School section for the program leading to the M.S. and Ph.D. degrees.

For admission to the curriculum in veterinary medicine, consult the previously listed pre-professional requirements.

Completion of the professional curriculum leads to the degree of Doctor of Veterinary Medicine. (Hours required for graduation: pre-professional—71; professional—154; total—225.)

First professional year

Fall semester	Course	Sem. hrs.
AP 700	Gross Anatomy I	6
AP 710	Microanatomy	5
AP 737	Veterinary Physiology I	6
AP 740	Veterinary Orientation	1
		18

Spring semester

AP 705	Gross Anatomy II	6
AP 747	Veterinary Physiology II	6
AP 748	Methods of Physiological Examination	1
AP 715	Developmental Organology & Placentation	2
LM 705	Veterinary Immunology	2
LM 755	Principles of Epidemiology	2
		19

Second professional year

Fall semester

LM 712	Veterinary Bacteriology & Mycology	5
LM 715	Veterinary Parasitology	5
PA 703	General Pathology	5
AP 770	Pharmacology	4
		19

Spring semester

LM 722	Veterinary Virology	3
LM 775	Clinical Pathology	3
PA 710	Systemic Pathology	5
SM 805	Surgery I	3
PA 859	Laboratory Animal Science	2
SM 830	Medicine I	4
		20

Third professional year

Fall semester

AP 720	Anatomy III	1
PA 847	Avian Diseases	3
SM 895	Toxicology	3
SM 850	Medicine II	4
SM 886	Comparative Animal Nutrition	5
LM 777	Laboratory Diagnosis	1
SM 814	Small Animal Surgery	3
		20

Spring semester

SM 824	Food Animal Medicine	4
AP 721	Anatomy IV	1
SM 811	Large Animal Surgery	4
SM 840	Radiology	3
SM 821	Companion Animal Medicine	4
SM 820	Theriogenology	3
SM 801	Clinical Skills	3
		22

Summer

SM 804	Clinical Medicine I	5
		5

Fourth professional year

Fall semester

LM 753	Zoonosis & Preventive Medicine	3
SM 870	Medicine III	3
SM 883	Practice Management	2
AP 775	Clinical Pharmacology	2
SM 806	Clinical Medicine II	9
		19

Spring semester

SM 808	Clinical Medicine III	12
		12

Veterinary medical library

The College of Veterinary Medicine has a well-equipped library consisting of approximately 20,000 volumes which deal with all phases of veterinary medical literature and many allied fields. It subscribes to 700 journals and has a large audio-visual collection of over 1,500 items. Numerous additional textbooks and journals are available at the main library on campus.

Laboratory Medicine

W.E. Moore,* head of department

Professors Bailie,* Coles,* Leland,* Keeton,* Minocha,* and Moore;* Associate Professors Burroughs* and Ridley;* Assistant Professor Chengappa;* Instructor Hoffman; Emeriti: Professors Leasure, Kelley, Lindquist, and Kitselman; Instructor Kimball.

Courses in parasitology, microbiology, public health, and clinical pathology are offered for students enrolled in the veterinary medicine curriculum. Classroom instruction is by lecture, recitation, laboratory experience, seminar, and demonstrations. Third- and fourth-year veterinary medical students receive practical instruction in clinical laboratory procedures and the interpretation of results of laboratory tests.

Major work leading to the master of science and the doctor of philosophy is offered in the interdepartmental group in pathology. (See description in Graduate School section.) Work at the graduate level includes advanced courses in clinical pathology, parasitology, microbiology, and public health.

Undergraduate and graduate credit

LM 645. Veterinary Mycology. (3) II. In even years. Detailed study of etiology of cutaneous, subcutaneous, and systemic fungus infections of animals, using histopathologic examinations and culture studies. Two hours rec. and three hours lab a week. Pr.: BIOL 198, PA 710. LM-645-1-1219

LM 650. Fundamentals of Veterinary Public Health. (3) I. Organization and function of food inspection services; zoonoses as related to foods of animal origin. Three hours rec. a week. Pr.: BIOL 198 and consent of staff. LM-650-0-1219

LM 705. Principles of Veterinary Immunology. (2) II. A study of host parasite interactions and immunologic mechanisms in health and disease of domestic animals. Two hours lec. per week. Pr.: AP 737. LM-705-1-1218

LM 712. Veterinary Bacteriology and Mycology. (5) I. Morphology, biology, and classification of pathogenic bacteria and fungi and their relation to the causes of disease. Three hours rec. and six hours lab a week. Pr.: LM 705; BIOL 555. LM-712-1-1218

LM 715. Experimental Parasitology. (3) II. In even years. Planning, execution, analysis, and reporting of experiments in parasitology. Techniques concerning laboratory diagnosis of parasitisms, anthelmintic evaluation, life cycle experiments. Pr.: Consent of instructor and five credit hours of parasitology. LM-715-2-1219

LM 722. Veterinary Virology. (3) II. Morphology, biology, and classification of viruses and their relation to the causes of disease. Two hours rec. and three hours lab a week. Pr.: LM 712 or equiv. LM-722-1-1218

LM 753. Zoonoses and Preventive Medicine. (3) I, II. Consideration of the bacterial, viral, parasitic, and mycotic diseases shared by animals and man. The role of the veterinarian in wholesomeness and quality assurance of foods of animal origin including regulatory requirements. Three hours lec. a week. Pr.: Third or fourth year (after Spring 1985) standing in College of Veterinary Medicine. LM-753-1-1218

LM 755. Principles and Methods of Epidemiology. (2) I, II. Use of ecologic and epidemiologic concepts in the study of diseases in populations; introduction to epidemiologic methods emphasizing problem solving; application to epidemiologic principles of disease control. Two lec. a week. Pr.: First or fourth year (through Fall 1985) standing in the College of Veterinary Medicine. LM-755-1-1218

LM 775. Clinical Pathology. (3) II. Principles, application and interpretation of clinical laboratory procedures, and experience with applicable techniques. Two hours lec. and three hours lab a week. Pr.: Second year standing in College of Veterinary Medicine. LM-775-1-1218

LM 777. Laboratory Diagnosis. (1) I. A study of laboratory techniques in hematology, cytology, bacteriology, mycology, urology, and clinical chemistry as applied to the diagnosis of animal diseases. Three hours of lab a week. Pr.: Third year standing in the College of Veterinary Medicine. LM-777-1-1218

LM 793. Veterinary Parasitology. (5) I. Study of the helminth, arthropod, and protozoan parasites of domestic animals. Emphasis on disease prevention, signs and lesions of parasites, biological and medicinal controls, and relation of parasites to public health. Three hours lec. and six hours lab a week. Pr.: Second year standing in College of Veterinary Medicine or consent of instructor. LM-793-1-1218

Graduate credit

LM 804. Clinical Medicine I.(5) S. Laboratory and field experience in epidemiology and public health (jointly with SM 804). Pr.: Fourth year standing in College of Veterinary Medicine. LM-804-1-1218

LM 808. Clinical Medicine III. (12) II. Instruction in laboratory procedures and interpretation of results (jointly with SM 808). Pr.: Fourth year standing in College of Veterinary Medicine. LM-808-1-1218

LM 810. Problems in Laboratory Medicine. (1-6) I, II, S. Work is offered in parasitology, microbiology, clinical pathology, and epidemiology. For M.S. students. Not for thesis research. Pr.: Graduate standing. LM-810-3-1219

LM 820. Advanced Clinical Pathology. (3) II. In even years. Further studies and application of the more detailed laboratory procedures and tests in hematologic, serologic, bacteriologic, chemical, and pathologic diagnosis. Pr.: PA 849 and consent of staff. LM-820-1-1219

LM 821. Advanced Clinical Pathology Laboratory. (1) I, II, S. Practical training in advanced techniques of clinical chemistry and hematology used in a large clinical pathology laboratory. Pr.: LM 820. LM-821-1-1219

LM 823, LM 824. Clincial Medicine I (6) **and II** (6). I and II respectively. Instruction in laboratory procedures and interpretation of results; laboratory and field experience in epidemiology and public health (jointly with SM 823 and SM 825). Pr.: Fourth year standing in College of Veterinary Medicine. Not available after Spring 1986. LM-823-1-1218, LM-824-1-1218

LM 825. Pathology of Body Fluids. (4) I. In even years. A detailed study of the alterations of the components of body fluids occurring in disease processes, and interpretations of these changes. Pr.: LM 775 and SM 870. LM-825-1-1219

LM 827. Veterinary Exfoliative Cytology. (2) I. In odd years. A study of the preparation, examination, and interpretation of aspiration, biopsies with emphasis on the recognition of inflammatory and neoplastic processes. Exfoliated material derived from various body fluids, tissues, and organs of the living clinic patient will serve as the basis of the study. One hour lec. and three hours lab a week. Pr.: LM 775 and PA 710. LM-827-1-1219

LM 830. Laboratory Medicine Seminar. (1) I, II, S. Designed primarily for graduate and veterinary students interested in infectious diseases. Each student is required to give reports on subjects related to infectious diseases. LM-830-0-1219

LM 835. Veterinary Epidemiology. (2) I. In even years. The scope and objectives of epidemiologic principles relative to infectious and noninfectious diseases transmissible from animals to man, and application of these principles by use of case investigations. Two hours lec. a week. Pr.: LM 753, SM 870. LM-835-0-1219

LM 850. Advanced Veterinary Parasitology. (3) II. In odd years. Structure, life cycle, pathology, immunology, public health significance, diagnosis and treatment of protozoan and metazoan parasites of veterinary significance. Pr.: Consent of instructor and five credit hours of parasitology. LM-850-2-1219

LM 860. Advanced Veterinary Bacteriology. (3) II. In odd years. The detailed study of the classification, morphology, biochemical, and differential characteristics permitting identification of the bacteria of veterinary medical significance. One hour rec. and six hours lab a week. Pr.: LM 720, BIOL 610 or equiv. LM-860-1-1219

LM 865. Diagnostic Veterinary Virology. (3) I. In odd years. The study of viruses associated with diseases of veterinary medical significance with emphasis on diagnosis. Clinical observations, pathogenesis, lesions, epidemiology, immunity, and control will be considered. One hour rec. and six hours lab a week. Pr.: LM 720, BIOL 730 or equiv. LM-865-1-1219

LM 877. Advanced Laboratory Diagnosis. (1-2) I, II, S. Practical training in evaluation, interpretation and written description of selected clinical pathology case materials. Course may be repeated by Laboratory Medicine or Pathology majors for a maximum of 4 credit hours (M.S.) and 8 credit hours (Ph.D.). Pr.: LM 777. LM-877-3-1219

LM 880. Principles and Technlques of Research in Medical Investigations. (3) I, S. On sufficient demand. A study of the procedures in planning and evaluating medical experiments and the use of special research instruments in medical research. Three hours rec. a week. Pr.: PA 703, AP 747 or equiv. LM-880-1-1219

LM 890. Veterinary Hematology. (3) II. In odd years. A detailed study of the blood of domestic animals. Emphasis is placed on the species variabilities. Three hours lec. a week. Pr.: LM 877. LM-890-1-1219

LM 899. Research in Laboratory Medicine. (1-6) I, II, S. Individual research in any of the fields of laboratory medicine. Pr.: Graduate standing. This work may form the basis for the M.S. thesis. LM-899-4-1219

LM 980. Problems in Laboratory Medicine. (1-6) I, II, S. Work is offered in parasitology, microbiology and clinical pathology. Not for thesis research. For Ph.D. candidates. Pr.: Graduate standing. LM-980-4-1219

LM 999. Research In Laboratory Medicine. (Var.) I, II, S. Individual research in any of the fields of laboratory medicine. This work may form the basis for the Ph.D. dissertation. Pr.: Graduate standing. LM-999-4-1219

Pathology

J.E. Cook,* head of department

Professors Cook,* Dennis,* Kruckenberg,* Leipold,* Smith,* and Strafuss;* Associate Professor Schoning.*

Basic courses in pathology are offered for students enrolled in the veterinary medicine curriculum. Instruction is by lecture, recitation, laboratory work, seminars, and demonstrations. Practical necropsy experience is provided for students as an adjunct to their pathology training and as an aid to disease diagnosis.

Major work leading to the degree master of science and doctor of philosophy is offered.

Work at the graduate level includes advanced courses in general, systemic, developmental, cellular, molecular, laboratory, and wildlife pathology.

Courses in diseases of laboratory animals, wildlife, and fish are offered for non-veterinary undergraduate and graduate students.

Undergraduate and graduate credit

PA 500. Topics in Comparative Pathology. (1-3) I, II, S. Selected topics in diseases of laboratory animals, wildlife, and fish for non-veterinary students. Pr.: BIOL 198 or equiv. PA-500-1-1218

PA 501. Diseases of Wildlife. (3) I. Infectious and noninfectious diseases of birds, furbearing animals, zoological animals, and fish with reference to methods of prevention and control. Three hours lec. a week. Pr.: BIOL 198 or equiv. PA-501-0-1218

PA 703. General Pathology. (5) I. Study of etiology, pathogenesis, lesions, and termination of processes of disease, including inflammation, necrosis, regeneration, oncology, and disturbances of metabolism, circulation, and growth. Three hours lec. and six hours lab a week. Pr.: Second year standing in College of Veterinary Medicine. PA-703-1-1218

PA 710. Systemic Pathology. (5) II. Pathology of the organ systems of domestic animals including gross and microscopic study of lesions. Three hours lec. and six hours lab a week. Pr.: PA 703. PA-710-1-1218

Graduate credit

PA 800, PA 803. Clinic I (2) **and II.** (2) I and II respectively. Instruction in necropsy procedures. (Jointly with SM 800 and SM 803.) Not available after spring semester 1985. Pr.: Third year standing in College of Veterinary Medicine. PA-800-1-1218, PA-803-1-1218

PA 804. Clinical Medicine I. (5) S. Experience in the necropsy laboratory. (Jointly with SM 804). Pr.: Third year standing in College of Veterinary Medicine. PA-804-1-1218

PA 806. Clinical Medicine II. (9) 1. Experience in the necropsy laboratory. (Jointly with SM 806). Pr.: Fourth year standing in College of Veterinary Medicine. PA-806-1-1218

PA 808. Clinical Medicine III. (12) II. Experience in the necropsy laboratory. (Jointly with SM 808). Pr.: Fourth year standing in College of Veterinary Medicine. PA-808-1-1218

PA 823, PA 825. Clinical Medicine I (6) **and II.** (6) I and II respectively. Experience in the necropsy laboratory. (Jointly with SM 823 and SM 825.) Not available after spring semester 1986. Pr.: Fourth year standing in College of Veterinary Medicine. PA-823-1-1218, PA-825-1-1218

PA 826. Histopathology. (3) 1, S. Introductory histopathological techniques course emphasizing routine and selected special techniques including light, darkfield, phase, and fluorescent microscopy. Practical experience will include preparing and embedding tissue blocks, cutting and mounting sections, hematoxylin and eosin staining, and selected special stains. Basic cellular changes to injury will be covered with emphasis on tissue and species differences. Principles of black and white, color, and polaroid photomicrography will be taught, followed by practical experience with the slides personally prepared in the histopathology laboratory. Pr.: PA 710 and consent of instructor. PA-826-1-1219

PA 845. Advanced Diagnostic Pathology. (3) I, S. Study of pathologic alterations of disease with emphasis on diagnostic characteristics. Pr.: PA 826 and consent of instructor. PA-845-1-1219

PA 847. Avian Medicine. (3) II. The prevention, diagnosis, and treatment of avian diseases. Three hours lec. a week. Pr.: Third year standing in College of Veterinary Medicine. PA-847-0-1218

PA 848. Avian Pathology. (2) I. In even years. Study of etiology, pathogenesis, gross and microscopic characteristics of avian diseases. Pr.: PA 847 or consent of instructor. PA-848-1-1219

PA 849. Pathological Technique and Diagnosis. (3) I, II. Practical experience in mammalian necropsy, avian necropsy, clinical pathology, histologic techniques, and diagnostic laboratory procedures. Pr.: PA 710 and consent of staff. PA-849-1-1219

PA 850. Perinatal Pathology. (2) S. Study of placental and fetal lesions of congenital infections in domestic animals. Pr.: PA 845. PA-850-1-1219

PA 851. Advanced Principles of Pathology. (3) I. Advanced study of disease and its effects with emphasis on etiology and pathogenesis; morphologic change will be correlated with changes in chemical composition and function. Pr.: PA 710 and consent of instructor. PA-851-1-1219

PA 852. Surgical Pathology. (1-2) I, II, S. Practical experience in examining and processing surgical biopsy specimens and writing histopathological reports. Pr.: PA 845. PA-852-1-1219

PA 855. Oncology. (3) 1. In odd years. Etiology, behavior, gross, microscopic characteristics, identification and prognosis of tumors. Pr.: PA 845 and consent of staff. PA-855-1-1219

PA 857. Developmental Pathology. (2) I. In even years. A bridging course between embryology and pathology with emphasis on congenital defects in domestic animals. Pr.: PA 710 and consent of instructor. PA-857-1-1219

PA 858. Medical Genetics. (3) 1. In odd years. Study of genetic diseases of domestic animals with emphasis on chromosomal observations, biochemical factors, and hereditary patterns in transmission. Pr.: PA 845 or equiv. PA-858-1-1219

PA 859. Laboratory Animal Science. (3) II. Consideration of the management and health of common species of laboratory animals. Three hours lec. a week. Pr.: Fourth year standing in College of Veterinary Medicine. PA-859-0-1218

PA 860. Pathology of Diseases of Laboratory Animals, Fish, and Wildlife. (3) 1. In even years. Pathology of diseases affecting laboratory animals, fish, and wildlife. Pr.: PA 845 and consent of instructor. PA-860-1-1219

PA 865. Advanced Topics in Comparative Pathology. (1-3) 1, II, S. Selected topics to assist pathology majors in their areas of specialization. Pr.: PA 845. PA-865-1-1219

PA 870. Pathology Seminar. (1) 1, II, S. Pr.: Consult department head. PA-870-0-1219

PA 880. Problems in Pathology. (1-6) I, II, S. Work is offered in pathology, pathological techniques, avian diseases, and diseases of laboratory animals, fish, and wildlife. Pr.: PA 710 and consent of instructor. PA-880-2-1219

PA 885. Necropsy Diagnosis. (1-3) 1, II, S. Necropsy procedures and diagnosis. May be repeated each semester by pathology majors with a maximum of six credit hours (M.S.). Pr.: PA 845 or consent of staff. PA-885-3-1219

PA 899. Research in Pathology. (1-6) I, II, S. Individual research in the pathology of animal disease. Pr.: PA 710, 849. This work may form the basis for the Master's thesis and the Ph.D. dissertation. PA-899-4-1219

PA 947. Advanced Systemic Pathology I. (5) I. In odd years. Study of etiology, pathogenesis, gross and microscopic characteristics, and systemic effects of diseases of cardiovascular, respiratory, gastrointestinal, urinary, and endocrine systems. Pr.: PA 845, 851, plus four credits of 985. PA-947-1-1219

PA 950. Advanced Systemic Pathology II. (5) II. In even years. Study of etiology, pathogenesis, gross, and microscopic characteristics and systemic effects of diseases of the skin, musculoskeletal, genital, and nervous systems, and special senses. Pr.: PA 947. PA-950-1-1219

PA 965. Cellular and Molecular Pathology. (4) II. Biochemistry of the injured cell, relationship of intracellular parasitism to cellular metabolism, metabolic and genetic basis of inherited disease. Pr.: Three hours credit in biochemistry or physiological chemistry and consent of instructor. PA-965-0-1219

PA 966. Cellular and Molecular Pathology Lab. (1) I, II, S. Basic techniques used in the study of cellular and molecular pathology. Pr.: PA 965 or conc. enrollment and consent of instructor. PA-966-1-1219

PA 970. Pathology Seminar. (1) I, II, S. Pr.: Consult department head. PA-970-0-1219

PA 980. Problem in Pathology. (1-6) I, II, S. Work is offered in pathology, pathological techniques, avian diseases, and diseases of laboratory animals, fish, and wildlife. Pr.: PA 710 and consent of instructor. PA-980-2-1219

PA 985. Necropsy Diagnosis. (1-3) I, II, S. Necropsy procedures and diagnosis. May be repeated each semester by pathology majors with a maximum of ten credit hours (Ph.D.). Pr.: PA 845 or consent of staff. PA-985-3-1219

PA 999. Research in Pathology. (1-6) I, II, S. Individual research in the pathology of animal disease. Pr.: PA 710, 849. This work may form the basis for the Ph.D. dissertation. PA-999-4-1219

Anatomy and Physiology

R.A. Frey, head of department

Professors Clarenburg,* Erickson*, Fedde,* Frey,* Klemm,* Oehme,* Trotter,* Upson,* and Westfall;* Associate Professors Hartke,* Quadri,* and Weinman;* Assistant Professors Blecha and Cash; Instructor Miller-Davis; Research Assistant Kuhlman; Emeriti: Professor Underbjerg; Adjunct Professor Gardner.

The Department of Anatomy and Physiology presents courses in the areas of physiology, pharmacology, physiological chemistry, nutrition, gross anatomy, and microscopic anatomy at both the undergraduate and graduate levels.

Biophysical electronic instrumentation, an electron microscope, environmental chambers, scintillation counter, respiratory mass spectrometer, and other instruments are available for physiological and anatomical studies.

The graduate program in anatomy and physiology leads to the doctor of philosophy degree and the master of science degree with specialties in the areas of anatomy, pharmacology, physiological chemistry, physiology, and toxicology.

A combined anatomy-physiology course is offered for undergraduate and graduate students outside the field of veterinary medicine.

Undergraduate and graduate credit in minor field

AP 530. Anatomy and Physiology. (4) II. General anatomy and physiology of the domestic animals. Three hours rec. and three hours lab a week. AP-530-1-1218

AP 531. Introduction to Pharmacology of Farm Animals. (2) II. The study of the basic principles of pharmacology as related to the proper and safe use of drugs and chemicals by the livestock industry. Pr.: AP 530 or equiv. AP-531-0-1218

Undergraduate and graduate credit

AP 700. Gross Anatomy I. (6) I. Gross dissection of the dog with comparative aspects of the cat. Three hours lec. and nine hours lab a week. Pr.: First year standing in College of Veterinary Medicine. AP-700-1-1218

AP 705. Gross Anatomy II. (6) II. Gross dissection of the horse and ruminant with comparative aspects of the pig, laboratory animals, and the chicken. Three hours lec. and nine hours lab a week. Pr.: AP 700. AP-705-1-1218

AP 710. Microscopic Anatomy I. (5) I. Origin, development, and microscopic structure and appearance of the cells and tissues of the animal body. Three hours lec. and six hours lab a week. Pr.: First year standing in College of Veterinary Medicine. AP-710-1-1218

AP 715. Developmental Organology and Placentation of Domestic Animals. (2) II. Detailed organogenesis of the various body systems of the mammal correlating adult anatomy with its developmental basis; presentation of histology and anatomy of the various placentae of domestic animals. Two hours lec. a week. Pr.: BIOL 510, AP 700 or 725. AP-715-1-1218

AP 720. Anatomy III. (1) I. Topographic, applied, and surgical anatomy covering all organ-systems including the central nervous system. The dog will be the major species emphasized. One hour lec. a week. Not available after fall semester 1984. Pr.: Third year standing in the College of Veterinary Medicine. AP-720-1-1218

AP 721. Anatomy IV. (1) II. Topographic, applied, and surgical anatomy covering all organ-systems including the central nervous system. The large domestic animals will be the major species emphasized. One hour lec. a week. Pr.: AP 720. AP-721-1-1218

AP 725. Gross and Microscopic Anatomy. (5) I. Survey of the Gross and Microscopic Anatomy of the major organ systems using the dog as a model, variations from canine structure seen in domestic animals will be emphasized where significant. Pr.: BIOL 201 or equiv. AP-725-1-1219

AP 737. Veterinary Physiology I. (6) I. Functioning of animals, to include cellular physiology and metabolism, renal physiology and water balance, digestive physiology, and animal behavior, with emphasis on physiologic control mechanisms, interrelationships of body systems, and criteria for evaluating animal health. Four hours lec. and six hours lab a week. Pr.: BIOCH 521 or equiv. AP-737-1-1218

AP 740. Veterinary Orientation. (1) I. Lectures on introduction to veterinary medicine. One hour lec. a week. Pr.: First year standing in College of Veterinary Medicine. AP-740-0-1218

AP 747. Veterinary Physiology II. (8) II. Functioning of the nervous, muscular, endocrine, cardiovascular, respiratory and reproductive systems of animals with emphasis on physiologic control mechanisms, interrelationships of body systems, and criteria for evaluating animal health. Four hours lec. and six hours lab a week. Pr.: AP 737 or equiv. AP-747-1-1218

AP 748. Methods of Physiological Examination. (1) II. Techniques for determination of the functional status of body systems of domestic animals. Two hours lab a week. Pr.: Second semester, first year standing in College of Veterinary Medicine. AP-748-1-1218

AP 770. Pharmacology. (4) I. The history, source, physical and chemical properties, compounding, biochemical and physiological effects, mechanism of action, absorption, distribution, biotransformation and excretion, therapeutic and other uses, and toxicity of drugs. Three hours rec. and three hours lab a week. Pr.: AP 737 and 747 or equiv. AP-770-1-1218

AP 773. Bioinstrumentation Laboratory. (1) I. In even years. Practical experience with and evaluations of laboratory and clinical techniques related to electrodes, transducers, and monitoring equipment. Emphasis is on instrumentation for the respiratory, cardiovascular, and nervous systems. Three hours lab a week. Pr.: AP 747 or equiv., or conc. enrollment in EE 773. AP-773-1-1219

AP 775. Clinical Pharmacology. (2) I. The application of the basic principles of pharmacology to the proper use of a single drug or multiple drug regimens to veterinary medical and surgical patients. Two hours lec. a week. Pr.: Fourth year standing in College of Veterinary Medicine. AP-775-0-1218

AP 778. Respiratory Function in Health and Disease. (3) II. In even years. A comprehensive overview of normal respiratory physiology in mammals with clinical application to the recognition of obstructive, restrictive, infectious and allergic diseases, and the management of mechanical ventilation and oxygen therapy. Pr.: AP 747 or equiv. AP-778-0-1219

Graduate credit

AP 803. Seminar. (1) I, II, S. Designed primarily for graduate and senior students enrolled for graduate credit in physiology. Each student is required to give a report on some subject related to physiology. The course is intended to stimulate interest in research and evaluate data. One hour a week. Pr.: Consent of staff. AP-803-0-1219

AP 825. Special Anatomy. (Var.) I, II, S. The Gross and/or Microscopic study of any system (or systems) of any domestic animal. Pr.: AP 700, or 710 or 725, or equiv. and consent of staff. AP-825-3-1219

AP 850. Anatomical Techniques. (1-2) I. In odd years, S. Pr.: Consent of staff. AP-850-3-1219

AP 855. Comparative Physiology. (3) II. Comparisons of physiological functions in the animal kingdom, including respiration, circulation, digestion, excretion, locomotion, and control. Pr.: BIOL 201, AP 530 or equiv. AP-855-0-1219

AP 860. Neuroscience. (2) I. An advanced multidisciplinary study of the central nervous system, including neurochemistry, neuropharmacology, neuroanatomy, neurophysiology, clinical neurology, and behavioral science. Pr.: Consent of staff. AP-860-0-1219

AP 865. Physiologic Constituents of Body Fluids. (2) I, II, S. Analysis of body fluids, with application to specific and fundamental problems in veterinary medicine. One hour rec. and one to three hours lab a week. Pr.: AP 747 and consent of staff. AP-865-1-1219

AP 885. Environmental Toxicology. (2) II. In odd years. An advanced toxicology course concerned with the occurrence, biological effect, detection, and control of foreign chemicals in the environment. Pr.: Consent of staff. AP-885-0-1219

AP 886. Comparative Animal Nutrition. (5) I. A study of the veterinary medical aspects of nutrition including principles of feeding and nutrition of common domestic species of food producing and companion animals; consideration of material relative to therapeutic nutrition as related to clinical management of diseased and convalescent animals. Same as SM 886 and ASI 886. Pr.: Third year standing in College of Veterinary Medicine or ASI 700. AP-886-0-1218

AP 888. Advanced Neuroendocrinology. (2) II. In even years. A study of the chemical link between the brain and the endocrine system; the roles of brain peptides, neural pathways and centrally acting drugs in the release of hormones; hormonal involvement in reproduction, aging, breast cancer, stress, etc.; a survey of the new and evolving concepts and techniques in neuroendocrinology. Two hours lec. a week. Pr.: AP 747 or BIOL 710 or equiv. AP-888-0-1219

AP 890. Problems in Pharmacology and Toxicology. (Var.) I, II, S. Individual investigation into the interactions of chemical compounds and living systems. Pr.: AP 770, or SM 895, or equiv. AP-890-4-1219

AP 898. Master's Report. (2) I, II, S. Pr.: Consent of staff. AP-898-4-1219

AP 899. Research. (1-4) I, II, S. For graduate students in the field of anatomy working toward the M.S. degree. Pr.: Consent of staff. AP-899-4-1219

AP 900. Physiology and Pharmacology of the Hormones. (3) II. The internal secretions, their synthetic analogues and use in research and therapy in domesticated animals will be evaluated. Two hours rec. and one to three hours lab a week. Pr.: AP 747 and consent of staff. AP-900-0-1219

AP 915. Histophysiology of Nutritional Deficiencies. (3) I, II, S. The study of changes occurring in tissues from nutritional deficiencies. Two hours rec. and three hours lab a week. Open to graduate students and veterinary students earning graduate credit. Pr.: Consent of staff. AP-915-0-1219

AP 925. Advanced Physiology. (3-5) I, II, S. The principles and techniques in the investigation of bioelectrical phenomena in relation to: (a) the physiology of the digestive organs; (b) myophysiology; (c) endocrinology and (d) neurophysiology. Advanced physiological experiments will be conducted to provide an understanding of the applications of electronic equipment. Rec. and two three-hour labs a week. Pr.: AP 747 and consent of staff. AP-925-1-1219

AP 995. Problems in Physiology. (Var.) I, II, S. Special problem-involving techniques utilized in studying the function of various organ systems of the body. Pr.: Consent of instructor. AP-995-4-1219

AP 999. Research in Physiology. (1-6) I, II, S. For graduate students working toward the M.S. or Ph.D. degree. Pr.: Consent of staff. AP-999-4-1219

Surgery and Medicine

J.R. Coffman,* head of department

Professors Anderson,* Butler,* Coffman,* Guffy,* Mosier,* Noordsy,* Oehme,* Schoneweis,* and Vestweber;* Associate Professors Beeman, Blauch,* Carnahan, Edwards, Gabbert, Samuelson, Schneider, Spire, and Taussig; Assistant Professors Brandt, DeBowes,* Fortney, Jernigan, and Layton; Instructor Avery; Emeritus: Professors Frick and Railsback; Adjunct Professors Travnicek and Philipps; Ancillary Professor Hulbert.

The University Veterinary Hospital is exceptionally well equipped for diagnosis and treatment of animal disease and for instruction of students in the science and art of veterinary medicine.

The hospital has a capacity of 82 large animal patients and 150 small animal patients. Members of the clinical staff, accompanied by students, conduct a field serviee for the purpose of programming animal health and for diagnosing and treating the various diseases affecting livestock and poultry. Consultation services result in frequent referral cases or investigational trips.

Third- and fourth-year students are active participants in the hospital and clinical services. Students are regularly assigned on a rotation basis during the year to various specialists within the clinical and pathology staffs. In addition to daily assignments, third- and fourth-year students are required to serve a two-week internship in the veterinary hospital, during which time they are responsible for the various management phases of the hospital.

The department presents courses in medicine, surgery, toxicology, obstetrics, and theriogenology to veterinary students.

Opportunities leading to the master of science degree are offered. Prerequisite to graduate work in the department is the completion of a four-year curriculum substantially equivalent to that required of students majoring in veterinary medicine at this University.

Outstanding library facilities, physical equipment, and an abundance of cases offer excellent resources for research in surgery and medicine.

Courses in surgery

Graduate credit

SM 802. Research in Surgery. (1-6) I, II, S. The objectives of the course are to attempt to solve problems confronting the veterinary surgeon. Pr.: AP 700, 705, 720; SM 805, 811, 814. Offered especially for graduates in veterinary medicine. SM-802-4-1219

SM 805. Surgery I. (3) II. Principles of surgery and consideration of instrumentation, the surgical suite, preparation and monitoring of the patient. Three hours lec. a week. Pr.: Second year standing in College of Veterinary Medicine. SM-805-0-1218

SM 811. Large Animal Surgery. (4) II. Lectures and demonstrations of food animal and equine surgical patients, including participation in surgical laboratories. Three hours lec. and three hours lab a week. Pr.: Third year standing in College of Veterinary Medicine. SM-811-0-1218

SM 814. Small Animal Surgery. (3) I. Lectures and demonstrations of small animal surgical patients, including participation in surgical laboratories. Two hours lec. and three hours lab a week. Pr.: Third year standing in College of Veterinary Medicine. SM-814-0-1218

SM 832. Surgical Techniques. (1-6) I, S. The study and application of developments in surgical techniques. Pr.: D.V.M. degree or consent of department head. SM-832-3-1219

SM 872. Organ Transplantation. (3) II. In odd years. The study of transplantation of tissues and associated problems. Pr.: D.V.M. degree or consent of department head. SM-872-3-1219

SM 877. Orthopedic Surgery. (4) II. In even years. Fundamentals, theory and practice concerning genetic, metabolic, infectious, neoplastic, and traumatic diseases of bones and joints. Pr.: D.V.M. degree or consent of department head. SM-877-3-1219

SM 887. Problems in Medicine or Surgery. (1-3) I, II, S. The course provides for the study of hosptial, medical, or surgical problems. The student, in conference with his major professor, outlines the methodology and procedures, conducts the study, and prepares a detailed report. Pr.: D.V.M. or consent of department head. SM-887-3-1219

Courses in medicine

Undergraduate credit

SM 235. Principles of Animal Disease Control. (3) II. A study of the factors that influence animal health and disease control. For students majoring in agriculture and other fields. Three hours lec. a week. Pr.: ASI 101 or equiv., AP 530, and sophomore standing. SM-235-0-1219

Graduate credit

SM 800, SM 803. Clinic I (2) **and II.** (2) I and II respectively. Instruction in operation of the outpatient clinic; participation in the receipt, restraint, examination, and treatment of the patient and in ancillary services of the animal hospital. Six hours lab a week. Pr.: Third year standing in College of Veterinary Medicine. SM-800-1-1218, SM-803-1-1218

SM 812. Research in Medicine. (1-6) I, II, S. An attempted solution of some of the medical and parasitological problems confronting the practitioner of veterinary medicine. Pr.: Consent of staff. SM-812-4-1219

SM 820. Theriogenology. (3) II. Consideration of prevention, diagnosis and treatment of disease, and maintenance of health and productivity of the genital tract of domestic animals. Three hours lec. a week. Pr.: Second year standing in College of Veterinary Medicine. SM-820-0-1218

SM 821. Companion Animal Medicine. (4) I. A study of the etiology, clinical signs, diagnosis, treatment, and control of infectious or contagious disease conditions which affect horses, dogs, and cats. Four hours lec. a week. Pr.: Third year standing in College of Veterinary Medicine. SM-820-0-1218

SM 822. Breeding Diseases. (1-5) I, II, S. Advanced studies of the breeding diseases of domestic animals. Pr.: D.V.M. degree or consent of staff. SM-822-3-1219

SM 823, SM 825. Clinical Medicine I (6) **and II.** (7) I and II respectively. Study of the veterinary medical and surgical patient; participation in field studies of animal disease, veterinary public health, seminars, and clinicopathologic conference. Twenty-two hours lab a week. Pr.: Fourth year standing in College of Veterinary Medicine. SM-823-1-1218, SM-825-1-1218

SM 824. Food Animal Medicine. (4) I. A study of the etiology, clinical signs, diagnosis, treatment, and control of infectious or contagious disease conditions which affect cattle, swine, and sheep. Four hours lec. a week. Pr.: Third year standing in College of Veterinary Medicine. SM-824-0-1218

SM 826. Systemic Medicine I. (1-3) I, II, S. Study of the medical aspects of diseases of the urinary, nervous and integumentary systems, and special senses. Pr.: D.V.M. degree or consent of department head. SM-826-3-1219

SM 827. Systemic Medicine II. (1-3) I, II, S. Study of the medical aspects of diseases of the cardiovascular, respiratory, musculoskeletal, and endocrine systems. Pr.: D.V.M. or consent of department head. SM-827-3-1219

SM 830. Medicine I. (4) II. Consideration of medical and pathological aspects of diseases affecting the musculoskeletal, respiratory, cardiovascular, special senses, and nervous systems. Four hours lec. a week. Pr.: Second year standing in College of Veterinary Medicine. SM-830-0-1218

SM 837. Interpretation of Radiologic Studies of Body Systems. (3) I. In odd years. The rationale of radiologic procedures are studied and the interpretation of radiographs of body systems emphasized. Pr.: D.V.M. degree or consent of department head prior to registration. SM-837-0-1219

SM 840. Radiology. (3) II. The theory and principles of x-rays, production and interpretation of radiographs and exposure factors, special radiographic methods, film storage and handling, processing, safety measures, and biologic effects of radiation. Three hours lec. a week. Pr.: Third year standing in College of Veterinary Medicine. SM-840-1-1218

SM 842. Comparative Gastroenterology. (3) I. In odd years. A comparative medical study of the etiopathogenesis, diagnostic criteria and treatment of gastroenteric disorders in the canine, equine, porcine, and bovine species. Comparable disorders in man are discussed. Pr.: D.V.M. degree. SM-842-3-1219

SM 850. Medicine II. (4) I. Consideration of the medical and pathological aspects of diseases affecting the endocrine, urinary, and digestive systems. Four hours lec. a week. Pr.: Fourth year standing in College of Veterinary Medicine. SM-850-0-1218

SM 870. Medicine III. (4) II. Consideration of programs of disease prevention for domesticated animals. Four hours lec. a week. Pr.: Fourth year standing in College of Veterinary Medicine. SM-870-0-1218

SM 882. Clinical Science Seminar. (1) I, II, S. A participating seminar for graduate students in the clinical sciences. Case studies will form the basis of the seminars. One-hour conference weekly. May re-enroll for total maximum of two credits. Pr.: Consent of department head. SM-882-0-1219

SM 883. Veterinary Practice Management. (3) II. The business aspects of a veterinary medical practice, including consideration of factors involved in establishing and maintaining a professional practice, professional ethics, accounting, and investments. Pr.: Fourth year standing in College of Veterinary Medicine. SM-883-0-1218

SM 885. Principles of Veterinary Internal Medicine. (3) II. An intermediate course presenting the key unifying concepts of Veterinary Internal Medicine. Each concept is introduced as a symptomatic entity ranging across the major domestic species. Interactions between body systems, the diagnostic process and the development of rational treatments are emphasized. Pr.: D.V.M. degree. SM-885-0-1219

SM 886. Comparative Animal Nutrition. (5) I. A study of the veterinary medical aspects of nutrition including principles of feeding and nutrition of common domestic species of food producing and companion animals; consideration of material relative to therapeutic nutrition as related to clinical management of diseased and convalescent animals. Same as AP 886 and ASI 886. Pr.: Third year standing in College of Veterinary Medicine or ASI 700. SM-886-0-1218

SM 887. Problems in Medicine or Surgery. (1-3) I, II, S. The course provides for the study of medical or surgical problems. The student, in conference with his major professor, outlines the methodology and procedures, conducts the study, and prepares a detailed report. Pr.: D.V.M. SM-887-3-1219

SM 892. Toxins in the Biological System. (2) I. In odd years. An advanced toxicology course concerned with the cellular and subcellular effects of various groups of toxins on the intact animal organism. Pr.: Biochemistry, organic chemistry, pharmacology, or consent of instructor. SM-892-3-1219

SM 895. Toxicology. (4) I. Effects of harmful substances on the animal body. Emphasis placed on toxicologic principles, and management of the poisoned patient. Four hours lec. a week. Pr.: Fourth year standing in College of Veterinary Medicine, BIOCH 520 and AP 747 or equiv. SM-895-0-1218

SM 897. Current Topics in Toxicology. (2) II. In even years and summers. An advanced toxicology course providing in-depth examination of toxicological areas of current relevance and/or controversy to mammalian health. Specific topics will change from semester to semester. Students in Ph.D. programs may repeat the course. Pr.: BIOCH 521, AP 747. SM-897-3-1219

Veterinary Diagnosis

H.D. Anthony, head

Professors Anthony* and Phillips; Associate Professors Gray, Milleret,* and Kennedy; Assistant Professors Howard and Mills.

The diagnostic laboratory serves the livestock industry in the state in solving animal disease problems. The laboratory not only is a service unit for animal diseases but also is a responsible service unit for human health problems relative to animal disease. The laboratory is the official rabies diagnostic service to the state.

Special laboratories with appropriate personnel and equipment perform a variety of diagnostic tests not otherwise available or accessible to practitioners in the state.

The diagnostic laboratory is nationally recognized as a fully accredited laboratory with capabilities in all areas of diagnostic service.

The staff of the laboratory also contributes to the teaching, service, and research programs of the College of Veterinary Medicine.

Faculty

Kansas State University

This alphabetical listing of KSU faculty identifies each person with a department or unit at the University. Many faculty have dual appointments, although they appear with only one identifying unit below.

Abbott, James W, Curriculum and Instruction
Able, Billy V, Animal Sciences and Industry
Abmeyer, Erwin, Horticulture
Abrams, Marc D, Division of Biology
Acasio, Ulysses A, Grain Science and Industry
Acer, James M, Cont Ed Conferences
Acker, Duane C, Office of the President
AdaMcHak, Donald J, Soc Anthro and Social Work
Adams, Albert W, Animal Sciences and Industry
Adams, David L, Student Publications
Adams, James P, Ext Org and Supv of Field Op
Adams, Margaret L, Family and Child Develop
Adams, Marjorie, English
Adams, Patricia C, Division of Biology
Adams, Robert A, Cont Ed Academic Outreach
Addison, Conall E, County Extension Agents
Adolph, Carol J, Intercollegiate Athl Inc
Afework, Seblewongel, Chemical Engineering
Afiat, Mehdi, Cont Ed Academic Outreach
Agan, Tessie A, Family Economics
Agosta, Lucien L, English
Ahern, Michael F, Marketing
Ahmadi, Reza T, Clothing Textiles and In Des
Ahmed, Nasir, Electrical Engineering
Akin, James N, Career Planning and Place
Akins, Richard G, Chemical Engineering
Akkina, Krishna R, Economics
Albers, Leisa D, Grain Science and Industry
Albracht, James J, Adult and Occupational Educa
Albracht, Mary L, Adult and Occupational Educa
Albrecht, Mary L, Horticulture
Albrecht, William C III, Entomology
Albright, Kenneth B, Ext Org and Supv of Field Op
Alexander, Loren R, Curriculum and Instruction
Algrim, Eugene E, County Extension Agents
Allee, Gary L, Animal Sciences and Industry
Allen, Deloran M, Animal Sciences and Industry
Allen, Eric B, Agriculture Economics
Allen, Gertrude E, Extension Home Economics
Allen, Joyce E, Curriculum and Instruction
Allen, Susan L, Center for Stud Develop
Alloway, Jay E, Computing Center
Amburgey, Victor A, Plant Pathology
Ameel, Henrietta R, Division of Biology
Amstein, William G, Extension Administration
Andelt, William F, Ext Org and Supv of Field Op
Anderegg, Marvin K, County Extension Agents
Anderson, Cathy L, Speech
Anderson, Elinor A, Extension Home Economics
Anderson, Kenneth E, Animal Sciences and Industry
Anderson, Kling L, Agronomy
Anderson, Neil V, Surgery and Medicine
Anderson, Phillip D, Speech
Andrews, Emmett L, Ksu Foundation
Andrus, David M, Marketing
Andrus, Lynda E, Art
Angle, Dennis R, Adult and Occupational Educa
Annis, Patty J, Family Economics
Ansdell, Joye, English
Anthony, Harry D, Diagnostic Laboratory
Anthony, Sally M, Intercollegiate Athl Inc
Aoki, Hiroyuki, Biochemistry
Apel, J Dale, Extension 4-H and Youth Prog
Apley, Kathryn Lynne, Agronomy
Appl, Fredric C, Mechanical Engineering
Appleby, Mariellen J, Ext Org and Supv of Field Op
Applegate, Roberta G, Journalism and Mass Comm
Arbuthnot, Richard E, Department of Housing
Arck, Jr William, Department of Housing
Argent, Robert M, Forestry
Armagost, James L, Speech
Armagost, Kathryn M, Modern Languages
Armbrust, Dean V, Agronomy
Arnold, Joellen, County Extension Agents
Arthur, Charles S III, Accounting
Aseneta, Lydia V, Speech
Aslin, Raymond G, Forestry
Asrar, Ghassem, Agronomy
Astroth, Kirk A, Ext Org and Supv of Field Op
Astuto, Terry A, Admin and Foundations of Edu
Atchison, Fred D, Forestry
Atkinson, C Harry, Agronomy
Atkinson, Daisy E, Extension Home Economics
Atkinson, Eric J, Extension Information
Aubrecht, Judith D, Cont Ed Sponsored Projects
Averell, Robert B, Clothing Textiles and In Des
Avery, Thomas B, Surgery and Medicine
Axe, Joy B, Animal Sciences and Industry
Azer, Naim Z, Mechanical Engineering
Babcock, Michael W, Economics
Bacon, Susan J, Director of Coop Extension
Bagheri, Hassan M, Mechanical Engineering
Bagley, Edgar S, Economics
Bailey, Gerald D, Curriculum and Instruction
Bailie, Wayne E, Laboratory Medicine
Baker, Doyle C, International Agri Program
Baker, Jeffrey T, Agronomy
Baker, Laura L, Horticulture
Baker, Lyman A, English
Baker, Richard P, Extension Information
Bakken, Steve, Cont Ed Academic Outreach
Balding, James L, Grain Science and Industry
Ball, Herbert D, Mechanical Engineering
Ball, Ralph G Jr, Management
Ballou, Russell S, Extension Information
Banbury, Evans E, Colby Branch Station
Bandyk, Cathryn A, Agriculture Economics
Barab, Jacqueline E, Mathematics
Barfoot, Dorothy, Division of Biology
Bark, L Dean, Physics
Barker, Diane, Cont Ed Academic Outreach
Barkley, Theodore M, Division of Biology
Barlow, Elaine C, County Extension Agents
Barnaby, Glenn A Jr, Agriculture Economics
Barnes, Alton A Jr, Landscape Architecture
Barnes, Carol Ann, English
Barnes, Helen L, County Extension Agents
Barnes, John H, County Extension Agents
Barnes, Philip L, Agricultural Engineering
Barnett, Brian D, Grain Science and Industry
Barnett, Francis L, Agronomy
Barnett, Mark A, Psychology
Barrett, Debra S, Surgery and Medicine
Bartel, Roy A, Dean of Education
Barton-Dobenin, Joseph, Management
Barton, David G, Agriculture Economics
Bartz, Jacquelyn M, Dietetics Rest and Inst Mgmt
Bascom, Charles H, Student Health
Bascom, Kathryn M, English
Basham, Edwin W, Computer Science
Bass, Lynda S, County Extension Agents
Bassette, Richard, Animal Sciences and Industry
Bassler, Bruce, Architecture
Bassler, Eunice M, Foods and Nutrition
Bates, Charles T Jr, Extension 4-H and Youth Prog
Bates, Herbert T, Chemical Engineering
Bates, Rodney M, Computer Science
Bauerle, Carol A, County Extension Agents
Bauernfeind, Robert J, Ext Org and Supv of Field Op
Baugher, Earl E, Agricultural Engineering
Bauman, Doreen J, Dean of Arts and Sciences
Baumann, Robert F, History
Baxter, William M, Fort Hays Branch Station
Beadle, Sharon L, Dean of Vet Medical Center
Beary, Dexter F, Division of Biology
Beatty, Daniel D, V-P for Business Affairs
Bechtel, Donald B, Division of Biology
Beck, B Terry, Mechanical Engineering
Beck, Glenn H, Vice-Pres for Agriculture
Beck, Henry V, Geology
Beck, Timothy J, County Extension Agents
Bedrosian, Janice L, Speech
Beech, Douglas F, Agriculture Economics
Beeman, Keith B, Surgery and Medicine
Beeman, Richard W, Entomology
Beeson, Margaret E, Modern Languages
Begnoche, Bradley M, Intercollegiate Athl Inc
Behnke, Keith C, Grain Science and Industry
Behrends, Carla A, Curriculum and Instruction
Beier, Carolyn E, Cont Ed Academic Outreach
Bell, Kermit O Jr, Entomology
Bell, Maurine W, Diagnostic Laboratory
Bell, Warren W, County Extension Agents
Belshe, Dana J, County Extension Agents
Bennett, Corwin A, Industrial Engineering
Bennett, Judith A, Center for Stud Develop
Bennett, Robert E, Grain Science and Industry
Benson, Douglas K, Modern Languages
Benson, Janet E, Soc Anthro and Social Work
Benton, Stephen L, Admin and Foundations of Edu
Bergen, M Betsy, Family and Child Develop
Berger, Mary Jo, County Extension Agents
Bergman, June, English
Berhe, Tareke, Agronomy
Bertholf, Judy K, Entomology
Best, Cecil H, Civil Engineering
Besthorn, Jodi L, County Extension Agents
Betton, Matthew T, Music
Bhalla, Chander P, Physics
Biby, Virgil H, County Extension Agents
Bidney, Dennis L, Plant Pathology
Bidwell, Orville W, Agronomy
Bieberly, Frank G, Agronomy
Biehl, Florence F, County Extension Agents
Biere, Arlo W, Agriculture Economics
Biles, Bertram R, Dean of Graduate School
Birnbaum, Roger D, Student Health
Bissey, Charles R, Arch Engr and Const Sci
Biswell, Clifford R, Forestry
Bittel, Steven G, Ext Org and Supv of Field Op
Bixler, Phyllis, English
Black, Richard D, Agricultural Engineering
Blackman, Merrill E, Arch Engr and Const Sci
Blair, Larry M, Forestry
Blair, W Lawarence, County Extension Agents
Blanding, Sylvia J, Library
Blankenhagen, Elmer W, Ext Staff and Prog Devlop
Blankinship, David A, Center for Stud Develop
Blankinship, Jill S, Department of Housing
Blauch, Bruce S, Surgery and Medicine
Blecha, Frank, Anatomy And Physiology
Blocker, Henry D, Entomology
Blocker, Martha B, Agronomy
Blohm, Paul J, Curriculum and Instruction
Bloom, Jill, Plant Pathology
Bloomquist, Margaret C, Dean of Education
Bocchi, Donald M, Intercollegiate Athl Inc
Bocklage, Nancy A, Department of Housing
Bockus, William W, Plant Pathology
Bode, Vernon C, Division of Biology
Bohannon, Robert A, Agronomy
Bollman, Stephan R, Family and Child Develop
Bolsen, Keith K, Animal Sciences and Industry
Bolte, Lerance C, Grain Science and Industry
Bolze, Martha Sue, Foods and Nutrition
Bonczkowski, Larry C, Ext Org and Supv of Field Op
Bonczkowski, Mary H, Director of Coop Extension
Bonewitz, E Ralph, Animal Sciences and Industry
Bontrager, Robert D, Journalism and Mass Comm
Booze, Thomas F, Surgery and Medicine
Borck, Linda, Dietetics Rest and Inst Mgmt
Borsdorf, Roe E, Agriculture Economics
Borst, Catherine J, County Extension Agents
Borst, William H, Ext Org and Supv of Field Op
Bosco, Pat J, Vice-Pres for Stud Affairs
Bosomworth, Janet C, Center for Stud Develop
Bouma, Christine F, Intercollegiate Athletics
Bourne, Michael L, Tribune Branch Station
Bower, Merry D, Library
Bower, Robert K, Office of Univ Relations
Bowers, Jane R, Foods and Nutrition
Bowman, Shelly A, County Extension Agents
Boyce, Jerry E, Intercollegiate Athl Inc
Boyd, David W, Mechanical Engineering
Boyer Jr, John E, Statistics
Boyer, James B, Curriculum and Instruction
Bozworth, Robert W, County Extension Agents
Bradley, Dorothy G, Economics
Bradley, Fred O, Admin and Foundations of Edu
Bradshaw, Michael H, Extension Home Economics
Brainard, Boyd B, Mechanical Engineering
Branden, Elsie P, County Extension Agents
Brandner, E Lowell, Dir of Research-Agri

Brandsberg, George T, Agriculture Economics
Brandt, Gary W, Surgery and Medicine
Bratton, Gerald F, Forestry
Brazle, Frank K, Ext Org and Supv of Field Op
Brede, Richard M, Soc Anthro and Social Work
Breeden, Lowell D, Dean of Vet Medical Center
Brensing, Darrell D, Adult and Occupational Educa
Brent, Benny E, Animal Sciences and Industry
Bresee, Randall R, Clothing Textiles and In Des
Brethour, John R, Fort Hays Branch Station
Brettell, John A, Center for Stud Develop
Bretz, Connis N, County Extension Agents
Bridges, Ronald L, Chemistry
Briggs, Beverly A, Family and Child Develop
Briggs, Vivian B, Extension Home Economics
Brill, Martha E, Extension Home Economics
Bristow, Ann R, Psychology
Broce, Alberto B, Entomology
Brondell, William J, English
Bronner, Donna M, Family Economics
Brookhart, Charles E, Music
Brooks, Howard L, Entomology
Brooks, Kenneth R, Landscape Architecture
Browder, Lewis E, Plant Pathology
Brower, Ruby K, Dietetics Rest and Inst Mgmt
Brown, David A, Interior Architecture
Brown, David C, Chemical Engineering
Brown, Elizabeth N, Adult and Occupational Educa
Brown, Judith L, Arch Engr and Const Sci
Brown, Patricia S, Center for Stud Develop
Brown, Richard E, Accounting
Brown, Susan J, Biochemistry
Brown, Thomas L, Dean of Business Administr
Brown, Wilbur E, Journalism and Mass Comm
Brownback, Samuel D, Agriculture Economics
Bruckerhoff, David N, Forestry
Bryant, Dale A, Architecture
Buchanan, Christine L, Extension Information
Buchheister, James J, Ksu Foundation
Buck, Donald C, Modern Languages
Buckler, Robert E, Family and Child Develop
Bugaighis, Mohamed M, Statistics
Bulbulian, Ronald, Health, Phys Ed, and Rec
Bulk, Herbert W, County Extension Agents
Bullard, Penelope S, Horticulture
Buller, Leroy G, Journalism and Mass Comm
Buller, Orlan H, Agriculture Economics
Bullock, Robert A, Pre Design Professions
Bulmahn, Heinz, Modern Languages
Bunton, Norma D, Speech
Burchett, Lowell A, Agronomy
Burckel, Glenna F, Modern Languages
Burckel, Robert B, Mathematics
Burden, Paul R, Curriculum and Instruction
Burke, Jack M, Extension Information
Burke, Katherine K, Extension Home Economics
Burke, Lucinda C, Student Health
Burkhard, R Kenneth, Biochemistry
Burkhart, Peyton H, Ext Org and Supv of Field Op
Burnham, Robert, Architecture
Burns, Errol G, Ext Org and Supv of Field Op
Burroughs, Albert L, Laboratory Medicine
Burroughs, Rosemary N, Grain Science and Industry
Burson, Maureen H, County Extension Agents
Burton, Charles L, Arch Engr and Const Sci
Buschman, Lawrent L, Entomology
Bussing, Charles E, Geography
Bussing, Sandra I, English
Bussman, Derinda G, County Extension Agents
Buth, Dennis K, Dietetics Rest and Inst Mgmt
Butler, Anne S, Center for Stud Develop
Butler, Hugh C, Surgery and Medicine
Butler, Norville L, Student Health
Buzenberg, Mildred, Management
Byarlay, Debra C, County Extension Agents
Byars, Jackson A, Curriculum and Instruction
Byers, Earle C, Industrial Engineering
Caine, Homer D Jr, Music
Cairns, Scott C, English
Caley, Homer K, Dean of Vet Medical Center
Calhoun, Myron A, Computer Science
Call, Edward P, Animal Sciences and Industry
Calvin, Dennis D, Entomology
Camp, Henry J, Soc Anthro and Social Work
Campbell, Joseph K, Computer Science
Campbell, Maryann A, Soc Anthro and Social Work
Campbell, Ronald W, Horticulture
Campbell, Terry W, Laboratory Medicine
Cannon, Barbara J, Clothing Textiles and In Des
Canter, Deborah D, Dietetics Rest and Inst Mgmt
Capriotti, John J, Intercollegiate Athl Inc
Cardwell, Alvin B, Physics
Carey, James C, History
Carinder, William H, Animal Sciences and Industry
Carlin, Thomas M, Ksu Foundation
Carlson, Glennis A, Ksu Foundation
Carlson, Jean K, Extension Home Economics
Carlson, Lois O, County Extension Agents
Carlson, Virgil P, County Extension Agents
Carnahan, David L, Surgery and Medicine
Carnahan, Nancy S, County Extension Agents
Carpenter, Frank R, Dir of Resident Inst-Agri
Carpenter, William E, Dean of Arts and Sciences
Carr, Linda L, County Extension Agents
Carrel, Ann Marie, English
Carrow, Robert N, Horticulture
Carter, Douglas C, Agronomy
Carter, G Clifford, Electrical Engineering
Carter, Phillip D, Adult and Occupational Educa
Cartwright, Kent W, Dean of Arts and Sciences
Cartwright, Virginia, Architecture
Casas-Ruiz, German G, Modern Languages
Case, Rosemarie Lynn, Physics
Cash, Walter C, Anatomy And Physiology
Cashin, William E, Cont Ed Sponsored Projects
Castro, Constanza, Management
Castro, Gabriel B, Surgery and Medicine
Caul, Jean F, Foods and Nutrition
Center, Melvin S, Division of Biology
Chalmers, John, Finance
Chang, Amos I T, Architecture
Chang, Cheng S, Agricultural Engineering
Chang, Ching-Chian, Chemical Engineering
Chapin, Ernest K, Physics
Chatterjee, Arun K, Plant Pathology
Chatterjee, Asita, Anatomy And Physiology
Chaudhuri, Sambhudas, Geology
Chaudhuri, U N, Agronomy
Chelikowsky, Joseph R, Geology
Chelz, Anthony W, Pre Design Professions
Chen, Chi T, Marketing
Chen, I-Tsuen, Animal Sciences and Industry
Chengappa, Mm, Laboratory Medicine
Chermak, Andrew L, Mathematics
Chestnut, Bibiana M, County Extension Agents
Chisam, Donald L, County Extension Agents
Choe, Young H, Mathematics
Choi, Suck-Shin, Internat Trade Institute
Choi, Yang I, Animal Sciences and Industry
Chow, Ming-Hong, Agriculture Economics
Chowdhury, Abul K, Chemistry
Chrest, John A, Soc Anthro and Social Work
Christensen, Keith H, Architecture
Christensen, Neal B, Agronomy
Christian, Michael L, County Extension Agents
Christianson, Kris K, Division of Biology
Christie, Leslie G Jr, Mechanical Engineering
Chung, Do Sup, Agricultural Engineering
Chung, Okkyung K, Grain Science and Industry
Cipriano, Joann E, Pathology
Claassen, Mark M, Agronomy
Clack, Robert W, Nuclear Engineering
Claflin, Larry E, Plant Pathology
Clarenburg, Rudolf, Anatomy And Physiology
Clark, Dana D, Computer Science
Clark, George R II, Geology
Clark, Jane C, English
Clark, Patricia P, History
Clark, Stanley J, Agricultural Engineering
Clark, William J, Dean of Business Administr
Clarke, Mary P, Extension Home Economics
Clarkson, Jean K, County Extension Agents
Clawson, Eldon L, County Extension Agents
Clayberg, Carl D, Horticulture
Claydon, Thomas J, Dairy and Poultry Science
Cleary, Elizabeth F, Speech
Cleavinger, Eugene A, Agronomy
Clegg, Robert E, Biochemistry
Clegg, Victoria L, Educational Resources
Cleland, Marjorie V, Dean of Arts and Sciences
Clement, Laurence A, Pre Design Professions
Cleveland, Janet R, Family and Child Develop
Clift, Gary W, English
Climenhaga, Joel R, Speech
Cline, Diann W, Extension Nutrition Prog
Clinton, William D, Political Science
Clonts, Hallie L, Extension Home Economics
Clore, Robert A, Art
Clothier, Teresa A, Fort Hays Branch Station
Coates, Gary J, Architecture
Coates, Julie T, Cont Ed Sponsored Projects
Cochran, Alfred W, Music
Cocke, Charles L, Physics
Cocke, Enid O, English
Codianni, Anthony V, Admin and Foundations of Edu
Coffee, E Guy, Dean of Vet Medical Center
Coffman, Crystal R, County Extension Agents
Coffman, James R, Surgery and Medicine
Cohen, Peter Z, English
Colbert, Conrad L, Intercollegiate Athl Inc
Cole, Duane E, Pathology
Cole, George W, Agronomy
Cole, Michael W, Computer Science
Cole, Randal L, Intercollegiate Athl Inc
Coleman, Edgar E, Surgery and Medicine
Coleman, Raymond J, Internat Trade Institute
Coleman, Richard P, Marketing
Coleman, Thomas R, Student Health
Coles, Embert H Jr, Laboratory Medicine
Collentine, Therese M, Extension Information
Collins, Bill D, Agriculture Economics
Collins, Monica M, Center for Stud Develop
Colombe, Debra A, Dietetics Rest and Inst Mgmt
Colwell, Clyde G, Curriculum and Instruction
Compaan, Alvin D, Physics
Conderman, Linda J, English
Conley, Josephine M, County Extension Agents
Connaughton, John F, K-State Union
Conrad, Abigail H, Division of Biology
Conrad, Gary W, Division of Biology
Conrad, William A, County Extension Agents
Conrow, Kenneth, Computing Center
Conrow, Margaret E, English
Consigli, Richard A, Division of Biology
Converse, Harry H, Agricultural Engineering
Conway, Kathleen M, Division of Biology
Cook, Giovanna T, Modern Languages
Cook, James E, Pathology
Cool, Vincent J, Fac Architectural Service
Coolidge, John H, Agriculture Economics
Cooper, Dennis B, Agronomy
Cooper, Helen G, Fac Architectural Service
Cooper, Max E, Physics
Cooper, Peter B, Civil Engineering
Copeland, Douglas W, Economics
Copeland, James L, Chemistry
Copher, William H, Jr, Alumni Records
Corah, Larry R, Animal Sciences and Industry
Corbin, William Bruce, Arch Engr and Const Sci
Cordy, Ann, Clothing Textiles and In Des
Cormany, Esther M, Clothing Textiles and In Des
Corpus, Kathleen M, Family Economics
Corrales, Ramon G, Family and Child Develop
Corum, Robert T Jr, Modern Languages
Cottom, Melvin C, Electrical Engineering
Coughlin, Colleen M, Kabsu
Cowan, Ora A, Department of Housing
Cowan, Thaddeus M, Psychology
Cox, Charlene, Music
Cox, David J, Biochemistry
Cox, Judy H, Surgery and Medicine
Cox, Lawrence J, Ext Org and Supv of Field Op
Cox, Richard H, Health, Phys Ed, and Rec
Cox, Thomas S, Agronomy
Cox, William E, County Extension Agents
Coyne, Patrick I, Agronomy
Coyner, Sandra J, Office of the Provost
Craig, James V, Animal Sciences and Industry
Craig, Jean A, Foods and Nutrition
Craig, M Dorothy, Curriculum and Instruction
Craigie, Barbara, Clothing Textiles and In Des
Cramer, Carl R, Intercollegiate Athl Inc
Crank, Robert E, Mechanical Engineering
Crary, James F, Civil Engineering
Crawford, Anthony R, Library
Crawford, David P, Agriculture Economics
Crawford, Francis W, Physics
Crawford, Golda M, History

Cress, Donald C, Entomology
Cress, Jeanice A, County Extension Agents
Crews, Patricia C, Clothing Textiles and In Des
Crist, Rosemary A, Ext Org and Supv of Field Op
Croft, Karen M, Animal Sciences and Industry
Cross, Gene B, V-P for Univ Facilities
Crow, Ernest W, Dietetics Rest and Inst Mgmt
Crowe, Frederick J, Plant Pathology
Cullers, Robert L, Geology
Culley, Louann F, Art
Cundy, Donald T, Political Science
Cunningham, Bryce A, Biochemistry
Cunningham, Franklin E, Animal Sciences and Industry
Cunningham, Stephen G, Adult and Occupational Educa
Cuppage, Lisa K, Anatomy And Physiology
Curnutte, Basil Jr, Physics
Curran, Steven P, Grain Science and Industry
Currie, Ralph A, Intercollegiate Athl Inc
Curry, Elizabeth A, County Extension Agents
Curry, Joseph T, Agronomy
Curtis, Wendell D, Mathematics
Czuchajowska, Zuzanna, Chemical Engineering
Czuchajowski, Leszek, Chemistry
Dace, E Wallace, Speech
Dahl, Charlotte L, English
Dahl, Robert E, Arch Engr and Const Sci
Dale, Bettie M, Dean of Arts and Sciences
Dale, E Brock, Physics
Daly, Myrna K, Extension Information
Daly, Robert K, Journalism and Mass Comm
Dana, Janice T, Dietetics Rest and Inst Mgmt
Danler, Robert J, Animal Sciences and Industry
Danskin, David G, Center for Stud Develop
Darling, David L Jr, Ext Community Res Develop
Dauber, Donald D, County Extension Agents
Davidson, Jeffrey L, County Extension Agents
Davie, James P, Intercollegiate Athl Inc
Davis, Albert J, Family and Child Develop
Davis, Arthur B, Grain Science and Industry
Davis, Brenda K, County Extension Agents
Davis, Donna J, Center for Stud Develop
Davis, Duane L, Animal Sciences and Industry
Davis, Elizabeth P, Family Economics
Davis, Gregory L, County Extension Agents
Davis, Jean C, Extension Home Economics
Davis, Lawrence C, Biochemistry
Davis, Linda W, Ext Org and Supv of Field Op
Davis, Patricia I, Dean of Education
Davis, Robert J, County Extension Agents
Davis, Susan A, Soc Anthro and Social Work
Davison-Crews, Estlle H, Adult and Occupational Educa
Dawes, Barbara E, Off of Undergrad Admission
Dawes, William H, Engineering Technology
Dawson, Connie S, County Extension Agents
Dawson, Rita T, County Extension Agents
Dawson, Robert E, Agriculture Economics
Day, Dennis J, Landscape Architecture
Day, Gary E, Agronomy
Dayton, Arthur D, Statistics
De Bowes, Linda J, Surgery and Medicine
De Bowes, Richard M, Surgery and Medicine
De Cou, Donald F, Economics
De Pew, Lester J, Entomology
De Spain, Barbara E, Curriculum and Instruction
Deaton, Michael L, Statistics
Dees, Jerome S, English
Dehon, Claire L, Modern Languages
Deihl, Lincoln W, Management
Deines, Dan S, Accounting
Deines, Vernon P, Regional and Community Plann
Delano, Frederick D, Agriculture Economics
Demand, John W, Admin and Foundations of Edu
Denell, Robin E, Division of Biology
Denning, Janice M, Soc Anthro and Social Work
Denning, Nancy R, English
Dennis, Stanley M, Pathology
Derr, W Gordon, Civil Engineering
Desch, Joseph P, Ii, Surgery and Medicine
Dettmer, Peggy A, Admin and Foundations of Edu
Devilbiss, Edward A, Architecture
Devore, John J, Computing Center
Dewerff, Donald M, County Extension Agents
Dexter, Miriam L, Extension Information
Deyoe, Charles W, Grain Science and Industry
Dick, Gary L, Entomology
Dicken, D Dean, Ext Org and Supv of Field Op
Dickey, James H, Intercollegiate Athl Inc
Dickinson, A J, Extension Home Economics
Dickson, William M, Agriculture Economics
Diehl, Janice C, Extension Nutrition Prog
Dietrich, Donald A, Regional and Community Plann
Dikeman, Earline F, Chemistry
Dikeman, Michael E, Animal Sciences and Industry
Dillingham, T Randy, Physics
Dilts, David A, Management
Dinkel, Allen J, County Extension Agents
Dixit, Aparna, Division of Biology
Dixon, Lawrence, Center for Stud Develop
Dixon, Lyle J, Mathematics
Dodge, Gilbert R, Dean of Agri and Dir of Aes
Dollar, Diane A, Art
Dollar, John P, Dean of Engineering
Domsch, Lenora Ann, County Extension Agents
Donaghy, Henry J, English
Donnelly, David P, Accounting
Donnelly, Michael L, English
Donnert, Hermann J, Nuclear Engineering
Donovan, Robert K, History
Doveton, John D, Geology
Downey, Ronald G, Educational Resources
Doyen, Timothy M, Physics
Dragsdorf, R Dean, Physics
Drake, Calvin L, Animal Sciences and Industry
Dressler, Robert E, Mathematics
Driesbach, Kim W, Accounting
Driss, Ann N, Modern Languages
Droge, Beverly F, County Extension Agents
Dubois, Donald K, Grain Science and Industry
Dubois, James H, Pre Design Professions
Duckers, Harry G Jr, County Extension Agents
Dudis, Kathleen J, Internat Trade Institute
Duffens, Kay L, Plant Pathology
Dunavan, Wilbur J, County Extension Agents
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Duncan, Alley H, Mechanical Engineering
Duncan, Stewart R, County Extension Agents
Dunham, James R, Animal Sciences and Industry
Dunning, Beverly K, County Extension Agents
Durar, Abdulrazag A, Agronomy
Durgan, Jack C, Interior Architecture
Durham, Susan K, Animal Sciences and Industry
Dushkin, Lelah, Soc Anthro and Social Work
Dyck, John H, Physics
Dyck, Norma J, Admin and Foundations of Edu
Dyer, Ruth A, Electrical Engineering
Dyer, Stephen A, Electrical Engineering
Ealy, Robert P, Landscape Architecture
Easdon, Paula S, County Extension Agents
Ebadi, Yar M, Management
Eberle, William M, Ext Community Res Develop
Eck, John S, Physics
Eckhoff, N Dean, Nuclear Engineering
Eckhoff, Steven R, Agricultural Engineering
Ecklund, Robert D, Student Health
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Eder, Joel L, County Extension Agents
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Edwards, Alvin J, Surgery and Medicine
Edwards, Jennifer R, Music
Edwards, Mark D, Department of Housing
Edwards, Robert L, Music
Efros, Fredric, Center for Stud Develop
Eggeman, George W, Mechanical Engineering
Eggers, Dexter, Agronomy
Eggert, Kelth W, Chemistry
Eggleston, Ronald A, County Extension Agents
Ehler, Stanley W, Agronomy
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Elcock, Douglas A, Budget Office
Elcock, Laura E, Pathology
Elder, Nelda J, Library
Eldringhoff, Sylvan, Clothing Textiles and In Des
Elkins, Richard N, Off of Undergrad Admission
Elliott, Dennis R, Student Health
Ellithorpe, Vera E, Extension Home Economics
Elzinga, Richard J, Entomology
Emerson, M Jarvin, Economics
Ender, Barbara A, Cont Ed Academic Outreach
Ender, Steven C, Center for Stud Develop
England, Naomi A, County Extension Agents
Engwall, Judy K, Plant Pathology
Enochs, Larry G, Curriculum and Instruction
Epps, James O, Intercollegiate Athl Inc
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Erickson, Donald B, Agriculture Economics
Erickson, Howard H, Anatomy And Physiology
Erickson, Larry E, Chemical Engineering
Erickson, Phyllis L, Library
Eriksen, Conrad J K, Dean of Business Administr
Erker, Michael F, County Extension Agents
Ernst, F Gene, Architecture
Erpelding, Lawrence H J, Dir of Resident Inst-Agri
Eshbaugh, Elbert L, Entomology
Esser, Joan E, Soc Anthro and Social Work
Etheridge, Ray W, County Extension Agents
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Evans, Robert W, Student Financial Asstnce
Evans, Thomas M, Health, Phys Ed, and Rec
Eversmeyer, Merle G, Plant Pathology
Everson, Everett K Jr, Agriculture Economics
Ewanow-Clement, Lynn, Pre Design Professions
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Eyestone, Merle L, Extension 4-H and Youth Prog
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Faidley, Donald L, Agriculture Economics
Fan, Liang T, Chemical Engineering
Farmer, Diana M, Library
Farmer, Earl L, Animal Sciences and Industry
Farrell, Eugene P, Grain Science and Industry
Fateley, William G, Chemistry
Fatemi, Ali M, Finance
Faubion, Jon M, Grain Science and Industry
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Fedde, Marion R, Anatomy And Physiology
Fedder, Norman J, Speech
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Fengel, Janis M, County Extension Agents
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Fick, Walter H, Agronomy
Field, Ralph G, Adult and Occupational Educa
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Fllnchbaugh, Barry L, Agriculture Economics
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Forbes, Lawrence K, Mathematics
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Fromm, Kenneth W, County Extension Agents
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Fry, Virginia H, Speech
Fryer, E Beth, Foods and Nutrition
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Fukamizo, Tamo, Biochemistry
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Gains, Sheila A, County Extension Agents
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Gallagher, Richard R, Electrical Engineering
Gallagher, Tom L, Computing Center
Gallaher, Harold G, Forestry
Gardner, James D, Anatomy And Physiology
Gardner, Richard L, Director of Coop Extension
Garg, Lalit C, Biochemistry
Garrett Jones, Sarah L, Pre Design Professions
Garrison, Jody R, County Extension Agents
Garten, Carl H, County Extension Agents
Garvin, Rick L, Educational Resources
Garzio, Angelo C, Art
Gaston, Gloria J, County Extension Agents
Gates, Dell E, Entomology
Gatliff, Edward G, Ext Org and Supv of Field Op
Gatlin, Dorothy J, County Extension Agents
Gaylor, Harry P, Forestry
Geiger, Alice L, Art
Geiser, Cherie J, Library
Geissler, Winnifred, English
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Gembol, Robert V, Soc Anthro and Social Work
Gendron, Robert P, Division of Biology
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Germann, Ralph N, Agriculture Economics
Germeroth, Darla R, Speech
Gerritz, Ellsworth M, Admissions and Records
Geyer, Katherine, Health, Phys Ed, and Rec
Geyer, Wayne A, Forestry
Gharpuray, Mahendra M, Chemical Engineering
Glbb, Timothy J, Entomology
Gibbons, Frank D III, Horticulture
Glbbons, Jacque E, Soc Anthro and Social Work
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Gibson, Karyn A, Office of Univ Relations
Gilbert, Robert W, County Extension Agents
Gill, Bikram S, Plant Pathology
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Gilliam, Frank S, Division of Biology
Gilliland, Don A, Engineering Technology
Gilroy, Marilyn P, Dietetics Rest and Inst Mgmt
Given, Kingley W, Speech
Glaser, Bonnie B, County Extension Agents
Glasgow, Larry A, Chemical Engineering
Glenn, Esther B, English
Glenn, Marilyn S, County Extension Agents
Glover, Tina R, Off-Campus Housing
Goddard, James F, Arch Engr and Const Sci
Goertz, Harvey E, Ext Org and Supv of Field Op
Goettel, Evon W, County Extension Agents
Gogolski, Jon H, Electrical Engineering
Gold, Garrett L, County Extension Agents
Golden, Janet L, County Extension Agents
Golladay, Richard E, County Extension Agents
Goltry, Donna J Hull, Regional and Community Plann
Gomez, Margaret A, County Extension Agents
Good, Don L, Animal Sciences and Industry
Goodenow, Philip E, Curriculum and Instruction
Goodheart, Clarene L, County Extension Agents
Goodman, Allan P, Arch Engr and Const Sci
Goodman, Deborah L, Adult and Occupational Educa
Goodrich, Arthur L, Division of Biology
Goodyear, Rodney K, Admin and Foundations of Edu
Gordon-Gilmore, Anita L, Library
Gormely, Patrick J, Economics
Gorsky, Edwin L, Cont Ed Academic Outreach
Gorton, Robert L, Mechanical Engineering
Gottsch, A Harold, County Extension Agents
Gottschald, Richard E, Journalism and Mass Comm
Gould, Daniel R, Health, Phys Ed, and Rec
Gould, Leonard K, Forestry
Graf, Joseph L, Jr, Geology
Graham, John R, Accounting
Graham, Linda P, Family Economics
Graham, Ralf O, Extension Information
Granstrom, David E, Laboratory Medicine
Grass, Charlene G, Library
Gray, Andrew P, Diagnostic Laboratory
Gray, Elizabeth H, Adult and Occupational Educa
Gray, Marion W Jr, History
Gray, Tom J, Physics
Greechie, Richard J, Mathematics
Green, Finis M, Dean of Education
Greene, Carroll B, Economics
Greene, Gerald L, Garden City Branch Station
Greene, Kathleen V, Center for Stud Develop
Greene, Laurenz S, Agriculture Economics
Gregoire, Mary, Dietetics Rest and Inst Mgmt
Greig, James K Jr, Horticulture
Grey, Gene W, Forestry
Grieg, Betty S, Dietetics Rest and Inst Mgmt
Griffin, Kitty K, County Extension Agents
Griffith, Gary R, Division of Biology
Griffith, Mary E, Adult and Occupational Educa
Griffitt, William B, Psychology
Griggs, Otis R, County Extension Agents
Grindell, Robert M, English
Grosh, Doris L, Industrial Engineering
Grosh, Louis E Jr, Industrial Engineering
Groswald, Douglas E, Division of Biology
Grunewald, Katharine K, Foods and Nutrition
Grunewald, Orlen C, Agriculture Economics
Gudgell, Dorothy B, Business Admin Inst Reserv
Guenzi, Arron C, Agronomy
Guerrero, Janice B, County Extension Agents
Guevara, Raul R, Center for Stud Develop
Guffy, Mark M, Surgery and Medicine
Gugle, Terry L, Animal Sciences and Industry
Gugler, Merle E, Accounting
Guikema, James A, Division of Biology
Gullette, Jon M, Fac Custodial Services
Gundlach, Catherine P, Department of Housing
Gupta, Millend, Pre Design Professions
Gurtz, Martin E, Division of Biology
Gustafson, David A, Computer Science
Gustafson, Merlin D, Political Science
Guthrie, Gersilda, Extension Home Economics
Gwin, Roy E, Tribune Branch Station
Habiger, Robert D, Interior Architecture
Hachmeister, Marvin H, Adult and Occupational Edu
Hackerott, Harold L, Fort Hays Branch Station
Hackerott, Jody, Family and Child Develop
Hackler, Raymond F, Agriculture Economics
Hadjipanayis, George, Physics
Haflich, Laurie, Family Economics
Haft, Everett E, Electrical Engineering
Hagan, Patricia W, Art
Hagan, Robert C, Nuclear Engineering
Hagans, Frank A, Ext Org and Supv of Field Op
Hagen, Lawrence J, Agronomy
Hagmann, Siegbert, Physics
Hain, James P, Colby Branch Station
Hajda, Joseph, Political Science
Hajda, Nina J, Grain Science and Industry
Halazon, George C, Ext Community Res Develop
Hall, Dean G, English
Hall, James M, Physics
Hall, Judith A, Dietetics Rest and Inst Mgmt
Hall, Lawrence F, Dean of Education
Hall, Raymond C, Chemical Engineering
Hall, Stephen J, Office of the Registrar
Halverson, Joyce A, Recreational Services
Ham, George E, Agronomy
Hamilton, James R, Philosophy
Hamilton, Mark A, Physics
Hammaker, Robert M, Chemistry
Hammarlund, Janice M, County Extension Agents
Hammel, Mary L, Dean of Education
Hammel, Richard A, Plant Pathology
Hamscher, Albert N, History
Hance, William A, Agronomy
Hankins, Jennifer A, Adult and Occupational Educa
Hankley, William J, Computer Science
Hanna, Gerald S, Admin and Foundations of Edu
Hanna, John B, Extension 4-H and Youth Prog
Hanna, Sherman D, Family Economics
Hannon, Larry E, County Extension Agents
Hansen, Carl U, Industrial Engineering
Hansen, Jeffery S, Division of Biology
Hansen, Merle F, Division of Biology
Hansing, Earl D, Plant Pathology
Haque, Ekramul, Agricultural Engineering
Har Gil, Gil, Pre Design Professions
Harbers, Carole A Z, Foods and Nutrition
Harbers, Leniel H, Animal Sciences and Industry
Harmes, David L, Art
Harmon, David L, Animal Sciences and Industry
Harms, Brian K, Electrical Engineering
Harner III, Joseph P, Agricultural Engineering
Harper, Harold B, Agronomy
Harper, Nancy G, Clothing Textiles and In Des
Harrell, Leann G Young, Grain Science and Industry
Harrington, Maurice C, County Extension Agents
Harris, Carol I, Physics
Harris, Henry D, Intercollegiate Athl Inc
Harris, Mary M, Curriculum and Instruction
Harris, Michael R, Department of Housing
Harris, Richard J, Psychology
Harris, T Robert, Soc Anthro and Social Work
Harrison, Dorothy L, Foods and Nutrition
Harrison, Paul D, Accounting
Hartenstein, Beth A, Alumni Records
Hartke, Glenn T, Anatomy And Physiology
Hartley, Roger T, Computer Science
Hartman, Jackie L, Management
Hartman, John H, Intercollegiate Athletics
Hartman, Paul D, County Extension Agents
Hartsig, Theodore A, Agronomy
Harvey, Tommy L, Entomology
Hashwa, Faud Ad, Division of Biology
Hastings-Sullivan, Cath, Family and Child Develop
Hatchett, Jimmy H, Entomology
Hause, Nancy P, Journalism and Mass Comm
Hause, Richard G, Curriculum and Instruction
Hausmann, Evelyn L, Adult and Occupational Educa
Hawes, Joseph M, History
Hawes, Kathryn S, Center for Stud Develop
Hawkinson, Dale P, Center for Stud Develop
Hawley, M Dale, Chemistry
Hay, Michael S, Division of Biology

Haycock, Beulah Ann, Accounting
Haycock, Gary E, Pre Design Professions
Hayes, Deborah C, Division of Biology
Hayter, Richard B, Director of Coop Extension
Hedgcoth, Charlie Jr, Biochemistry
Hedrick, Artyce G, Clothing Textiles and In Des
Hedrick, Donald K, English
Heerman, Charles E, Curriculum and Instruction
Heid, Walter G Jr, Agriculture Economics
Heikes, Keith A, Kabsu
Hein, Charles R, Office of Univ Relations
Heinly, Freda K, County Extension Agents
Heinrich, Geoffrey M, International Agri Program
Heintzelman, J Cranston, Architecture
Helbert, Susan E, County Extension Agents
Held, Jon J, Mechanical Engineering
Helgesen, Robert G, Entomology
Heller, Mary F, Curriculum and Instruction
Heller, Steve F, English
Helmuth, Diane S, County Extension Agents
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Henıphill, Dwaine R, Speech
Henderson, F Robert, Ext Org and Supv of Field Op
Henderson, Kenneth L, Intercollegiate Athl Inc
Hendricks, Patricia A, County Extension Agents
Hendrix, Larry D, Ext Org and Supv of Field Op
Henry, David H, Statistics
Hensley, David L, Horticulture
Henson, Darl W, County Extension Agents
Henson, Wayne W, Cont Ed Academic Outreach
Herman, Louis M, Mathematics
Hernandez, Tomas C, Speech
Herod, Jon G, Agriculture Economics
Herring, Nancy S, Dietetics Rest and Inst Mgmt
Herron, George M, Garden City Branch Station
Hess, Carroll V, Agriculture Economics
Hetrick, Barbara A, Plant Pathology
Hetrick, James A, Plant Pathology
Heyne, Elmer G, Agronomy
Heywood, Kenneth M, Ksu Foundation
Hickey, Bill G, Intercollegiate Athl Inc
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Higgins, James J, Statistics
Higgins, Randall A, Entomology
Higgins, Regina K, Plant Pathology
Higham, Barbara D, Economics
Higham, Robin D S, History
Highland, Ronald L, Anatomy And Physiology
Hightower, Ray E, Dean of Engineering
Hill, David M, Physics
Hill, Donald R, Management
Hill, J Lee, Jr, Clothing Textiles and In Des
Hill, Jerome A, Computer Science
Hill, Nicholas S, Agronomy
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Hinds, Mark A, Animal Sciences and Industry
Hines, Robert H, Animal Sciences and Industry
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Hinrichs, Edith M, Dean of Arts and Sciences
Hiss, Deann M, County Extension Agents
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Hobson, Leland S, Engineering Experiment Sta
Hodges, R Jean, County Extension Agents
Hodges, Teddy O, Arch Engr and Const Sci
Hoeflin, Ruth M, Dean of Home Economics
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Hoffman, Shryll L, Laboratory Medicine
Hoffman, Stephen M, Director of Coop Extension
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Hoisington, Richard C, Accounting
Holcomb, Carol Ann, Family and Child Develop
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Holland, Gailyn L, Anatomy And Physiology
Hollinger, Robert D, Finance
Hollingsworth, Clarence, County Extension Agents
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Honstead, William H, Dean of Graduate School
Hoobler, James A, County Extension Agents
Hook, Patricia W, Division of Biology
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Hoover, Luann, Family and Child Develop
Hoover, Mallory R, Dean of Vet Medical Center
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Horn, Jerry G, Dean of Education
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Hoseney, R Carl, Grain Science and Industry
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Hoss, Ray M, Ext Org and Supv of Field Op
Hostetler, Charles H, Finance
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House III, George S, Dean of Business Administr
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Howard, Patricia A, County Extension Agents
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Howerton, Phyllis Y, County Extension Agents
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Hsu, Chen-Jung, Mathematics
Hu, Kuo Kuang, Civil Engineering
Hua, Duy H, Chemistry
Huang, Chi-Lung, Mechanical Engineering
Huang, Yong Bien, Chemical Engineering
Hubbard, John D, Grain Science and Industry
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Hugo, Cornelius, Agriculture Economics
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Hummels, Donald R, Electrical Engineering
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Jayo, Manuel J, Pathology
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Johnson, Michael G, Office of the President
Johnson, Naomi M, Extension Home Economics
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Johnson, Robert E, Health, Phys Ed, and Rec
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Jolly, Samone L, Center for Stud Develop
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Jones, Dale V, English
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Jorgensen, Lee M, Extension Information
Jorns, William J, Dean of Agri and Dir of Aes
Jung, Moo Y, Industrial Engineering
Jurich, Anthony P, Family and Child Develop
Justvig, Harry, Intercollegiate Athl Inc
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Kastner, Curtis L, Animal Sciences and Industry
Kater, Larry E, County Extension Agents
Kaufman, Burton I, History
Kaufman, Donald W, Division of Biology
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Kegoya, Yoniko, Plant Pathology
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Kemble, Roger J, Plant Pathology

Kemp, Kenneth E, Statistics
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Kiewra, Kenneth A, Admin and Foundations of Edu
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Killeen, Janet M, Agronomy
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MacFarland, David T, Journalism and Mass Comm

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Martini, Steve E, Recreational Services
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Mattson, Richard H, Horticulture
Maxon, Richard C, Agriculture Economics
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Mc Ginnis, James D, Intercollegiate Athl Inc
McAdams, Verl E, Agronomy
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McCarley, Bruce W, County Extension Agents
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McCarthy, Paul E, English
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McCormick, Dewey Z, Animal Sciences and Industry
McCormick, Frank J, Civil Engineering
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McCullough, Elizabeth A, Clothing Textiles and In Des
McCully, William B Jr, County Extension Agents
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McDonald, Charles R, Pre Design Professions
McDonald, Richard N, Chemistry
McEllhiney, Robert R, Grain Science and Industry
McElroy, Mary A, Health, Phys Ed, and Rec
McEnroe, Bruce M, Civil Engineering
McFarland, Marcia R, Extension 4-H and Youth Prog
McGaughey, William H, Entomology
McGhee, Richard D, English
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McGinness, Kenneth E, County Extension Agents
McGlashon, Dolores T, Extension Information
McGraw, Betty R, Modern Languages
McGraw, Eugene T, Interior Architecture
McGuire, James H, Physics
McGuire, Timothy M, Intercollegiate Athl Inc
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McKinney, Katheryn A, Health, Phys Ed, and Rec
McKinney, Nathan V, Agronomy
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McNeil, Joan N, Family and Child Develop
McPeek, Tara, Dietetics Rest and Inst Mgmt
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Meloan, Clifton E, Chemistry
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Miller-Davis, Pamela A, Anatomy And Physiology
Miller, Carol L, Modern Languages
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Miller, David P, Dietetics Rest and Inst Mgmt
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Miller, Forrest R, Mathematics
Miller, George P, Agronomy
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Palacio, June P, Dietetics Rest and Inst Mgmt
Pallett, William H, Educational Resources
Palmer, Rachel F, County Extension Agents
Pankratz, Larry W, Cont Ed Conferences
Parish, Thomas S, Admin and Foundations of Edu
Parker, Craig B, Music
Parker, Leonard C, Agriculture Economics
Parker, S Thomas, Mathematics
Parker, Willard A, Mathematics
Parmley, John D, Adult and Occupational Educa
Parr, Kellee R, County Extension Agents
Parsons, Karla M, Grain Science and Industry
Partlow, H Charlie, Dietetics Rest and Inst Mgmt
Paschal, Joann L, County Extension Agents
Patel, Snehal A, Chemical Engineering
Patton, Dennis L, County Extension Agents
Paukstelis, Joseph V, Chemistry
Paukstelis, Maria K, Chemistry
Paul, Robert J, Management
Pauli, Ross I, Mechanical Engineering
Paulsen, Avelina Q, Division of Biology
Paulsen, Gary M, Agronomy
Pavlides, Eleftherios, Pre Design Professions
Payne, Ifan, Pre Design Professions
Pearson, Charles A, Plant Pathology
Pearson, Glenda N, County Extension Agents
Peck, Ernest G, Extension Information
Pedersen, John R, Grain Science and Industry
Peine, Caroline F, Center for Stud Develop
Pelischek, Milton Z, English
Pelton, Marion H, Music
Pence, John T, Department of Housing
Pence, Karen T, Dean of Home Economics
Penner, Karen P, Extension Home Economics
Perchellet, Jean-Pierre, Division of Biology
Perkins, Charles C Jr, Psychology
Perl, Michael F, Curriculum and Instruction
Perng, Jong-I, Agriculture Economics
Perng, Shian K, Statistics
Perry, Ralph H, Comptrollers Office
Pesci, Patrick H, Department of Housing
Peters, Chester E, Vice-Pres for Stud Affairs
Peters, George R, Soc Anthro and Social Work
Peterson, Edmund J, Director of Coop Extension
Peterson, Jack T, Student Health
Peterson, Mary D, Clothing Textiles and In Des
Peterson, Verlin H, Agronomy
Petrie, Joyce E, Curriculum and Instruction
Pettijohn, Linda K, County Extension Agents
Pettis, Dorothy B, Modern Languages
Pfender, William F, Plant Pathology
Phares, E Jerry, Psychology
Phelps, Jeanne A, Center for Stud Develop
Philipp, Joseph T, Surgery and Medicine
Phillips, Margaret E, County Extension Agents
Phillips, Richard, Agriculture Economics
Phillips, Robert M, Diagnostic Laboratory
Phillips, Stephen B, Student Health
Phillips, William M, Fort Hays Branch Station
Pickett, William F, International Agri Program
Pickle, Judy F, Curriculum and Instruction
Pigno, Antonia Q, Library
Pigno, Louis, Mathematics
Pine, Wilfred H, Agriculture Economics
Pinkerton, Lester R, Forestry
Pirzada, Shaheen A, Modern Languages
Pittenger, Thad H, Division of Biology
Pittle, Joseph T, Cont Ed Conferences
Platt, Cynthia B, Off of Undergrad Admission
Pohlman, Randolph A, Finance
Pohlman, Richard, Architecture
Polich, Gerald S, Music
Pollmann, D Steven, Animal Sciences and Industry
Polson, Cheryl J, Cont Ed Academic Outreach
Ponte, Joseph G Jr, Grain Science and Industry
Pope, Ronald V, Animal Sciences and Industry
Popken, Kathleen E, County Extension Agents
Poresky, Robert H, Family and Child Develop
Posler, Gerry L, Agronomy
Posner, Elieser, Grain Science and Industry
Poston, Freddie L, Entomology
Pothuluri, Jairaj V, Agronomy
Powell, G Morgan, Agricultural Engineering
Powell, Sheryl A, Department of Housing
Praeger, Herman A Jr, Agronomy
Prakash, Veeramani, Mechanical Engineering
Prather, Randall S, Surgery and Medicine
Prawl, Warren L, Tunisia Contract Off Campu
Pray, Nancy B, Intercollegiate Athl Inc
Pray, Warren C, Extension Information
Pretzer, Carolyn A, Dean of Arch and Design
Pretzer, Don D, Agriculture Economics
Price, Floyd H, Curriculum and Instruction
Prince, Paul T, Journalism and Mass Comm
Proctor, Freda P, Cont Ed Academic Outreach
Proite, Rosanne, Department of Housing
Pujol, Elliott, Art
Puls, Marilee C, Adult and Occupational Educa
Purcell, Keith F, Chemistry
Purcell, Susan C, Chemistry
Purdy, Naomi C, Student Health
Quadri, S Kaleem, Anatomy And Physiology
Quinlan, Leon R, Horticulture
Quiring, Susan M, County Extension Agents
Quiring, Virginia M, Library
Radke, Gary A, Biochemistry
Ragan, James F Jr, Economics
Rahman, Talat S, Physics
Rahmatullah, Mohammed, Biochemistry
Rainbolt, Harry R, Speech
Rajashekar, Channa B, Horticulture
Ramm, Alexander G, Mathematics
Ramoska, William A, Entomology
Ramsey, Lisa S, County Extension Agents
Ramundo, Bruce A, Plant Pathology
Ramundo, Rosemary A, Division of Biology
Raney, Robert J, Agronomy
Ranhotra, Gurbachan S, Foods and Nutrition
Rankin, Charles I, Admin and Foundations of Edu
Rappoport, Leon H, Psychology
Rasmussen, Albie C, Family Economics
Rassette, Brian L, Intercollegiate Athl Inc
Rassman, Neal, Landscape Architecture
Rasure, John R, Electrical Engineering
Ratcliffe, Frederick W, Engineering Technology
Rathbone, Donald E, Dean of Engineering
Raupp, Jr William J, Plant Pathology
Ravi Kumar, Prathivadi, Mechanical Engineering
Rayburn, Lane A, Plant Pathology
Razzaq, Khalid K, Biochemistry
Reagan, Barbara M, Clothing Textiles and In Des
Reagan, Charles E, Philosophy
Rector, Ralph B, County Extension Agents
Reddy, Pochana G, Animal Sciences and Industry
Rediker, Janet B, County Extension Agents
Redman, Alice Lois, Extension 4-H and Youth Prog
Reeck, Gerald R, Biochemistry
Reed, Carl, Grain Science and Industry
Rees, John O, English
Reese, John C, Entomology
Reeves, Robert D, Foods and Nutrition
Regehr, David L, Agronomy
Regenbaum, Shelly, English
Regneir, Roger E, Agriculture Economics
Reichman, Jessica L, Art
Reichman, Omer J, Division of Biology
Reid, William R, Horticulture
Reist, Deanna K, County Extension Agents
Rekers, George A, Family and Child Develop
Rempe, David H, Agriculture Economics
Renz, Amy Button, Alumni Records
Replogle, Renata J, Art
Replogle, Rex W, Art
Rhodes, James R, Economics
Riat, Lawrence D, County Extension Agents

Richard, Patrick, Physics
Richards, Verlyn D, Finance
Richardson, Draytford, Animal Sciences and Industry
Richardson, Lindy L, County Extension Agents
Richmond, Jayne E, Admin and Foundations of Edu
Richmond, Mary F, County Extension Agents
Richter, Linda K, Political Science
Richter, William L, Political Science
Ridley, Robert K, Laboratory Medicine
Riederer, Russ H, Intercollegiate Athl Inc
Riggs, Hazel M, History
Riggs, Jean M, Department of Housing
Riley, Jack G, Animal Sciences and Industry
Riley, John B, Agriculture Economics
Riley, Kim P, Speech
Riley, Merrill J, Management
Ringler, Wilber E, Director of Coop Extension
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Riseman, Louis, Geology
Ro-Trock, Laurence G, Family and Child Develop
Roach, Faith R, Dietetics Rest and Inst Mgmt
Robbins, Benny S, Ext Org and Supv of Field Op
Robbins, Francis V, Agricultural Engineering
Robel, Raydon H, Recreational Services
Robel, Robert J, Division of Biology
Roberts, Carolyn V, Dean of Vet Medical Center
Roberts, Harold A, Animal Sciences and Industry
Roberts, Mary E, Library
Roberts, Sharon A, Library
Robertson, John F, County Extension Agents
Robertson, Larry D, Colby Branch Station
Robinson, M John, Nuclear Engineering
Robinson, Sally A, Division of Biology
Robison, John E, County Extension Agents
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Roche, Thomas E, Biochemistry
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Rodgers, Dan M, Agronomy
Roe, Kirk W, County Extension Agents
Roeder, Beverly L, Surgery and Medicine
Rogers, Danny H, Ext Org and Supv of Field Op
Rogers, Deborah E, Grain Science and Industry
Rogers, Mary R, County Extension Agents
Rogge, Mary E, Soc Anthro and Social Work
Rohles, Frederick H Jr, Dean of Engineering
Rohn, Nadine L, County Extension Agents
Rohrer, Wayne C, Soc Anthro and Social Work
Roland, Juanita M, Admin and Foundations of Edu
Rollins, Judith C, Family and Child Develop
Roncek, Dennis W, Soc Anthro and Social Work
Roncek, Susan J, Soc Anthro and Social Work
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Rose, Raymond J, Plant Pathology
Roseland, Craig R, Entomology
Rosenberg, Jerry P, Political Science
Ross, Joseph M, Physics
Ross, Lynn M, Plant Pathology
Ross, Lynne S, Speech
Roth, Thomas A, Chemical Engineering
Roufa, Donald J, Division of Biology
Routson, Roger L, Art
Routson, Sally R, K-State Union
Rowland, Jack J, Forestry
Rowland, Jean R, County Extension Agents
Rowlett, Jane D, Affirmative Action
Royster, Philip M, English
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Ruggles, Bertram L, V-P for Business Affairs
Rushing, Steven J, Music
Russ, Oliver G, Agronomy
Russell, Candyce S, Family and Child Develop
Russell, Eugene R, Civil Engineering
Ryan, Thomas F, Student Health
Rys, Andrzej, Electrical Engineering
Saal, Frank E, Psychology
Sabourin, Thierry, Physics
Saeki, Sadahiro, Mathematics
Sageser, A Bower, History
Salahu-Din, Hakim A, Off of Undergrad Admission
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Samelson, Phoebe J, Dean of Arts and Sciences
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Sanko, Carolyn M, Speech
Sanner, Albert E, Architecture
Santamaria, David, Agriculture Economics
Santiago, Emmanuel S, Finance
Sato, Takashi, Division of Biology
Sauer, David B, Plant Pathology
Sauerwein, Charles P, County Extension Agents
Schafer, David E, Animal Sciences and Industry
Schafer, Greg A, Adult and Occupational Educa
Schalles, Robert R, Animal Sciences and Industry
Schanker, Lynn S, Division of Biology
Schanker, Neil, Cont Ed Sponsored Projects
Schapaugh, William T Jr, Agronomy
Schaplowsky, Terry W, Horticulture
Scharig, Terry D, Interior Architecture
Scheer, Richard K, Philosophy
Scheidt, Rick J, Family and Child Develop
Schell, Leo M, Curriculum and Instruction
Schenck-Hamlin, Donna C, Library
Schenck-Hamlin, William, Speech
Scherer, Mathias A, Civil Engineering
Scherling, Deborah E, Music
Scheule, Barbara Em, Department of Housing
Schild, James A, County Extension Agents
Schindler, Dale E, Agricultural Engineering
Schlegel, Rolf, Plant Pathology
Schlender, John R, Agriculture Economics
Schlesener, Norman E, County Extension Agents
Schlup, John R, Chemical Engineering
Schmidt, David A, Computer Science
Schmidt, Teresa T, Art
Schnake, Lawrence D, Agriculture Economics
Schneider, Harold W, English
Schneider, Jacob E, Surgery and Medicine
Schneider, Mary W, English
Schnur, Alfred C, Soc Anthro and Social Work
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Schofield, Eileen K, Dir of Research-Agri
Schoneweis, David A, Surgery and Medicine
Schoning, Polly, Pathology
Schott, Fabiola C, Chemistry
Schowengerdt, Daniel B, Chemistry
Schraeder-Neidenthal, J, Speech
Schrag, Dwayne D, Library
Schrag, Sandra K, Library
Schrandt, Mary M, County Extension Agents
Schrenk, William G, Chemistry
Schrock, Mark D, Agricultural Engineering
Schroeder, Dorothea A, County Extension Agents
Schroeder, Mary M, Ext Org and Supv of Field Op
Schroeder, William H, Dir of Resident Inst-Agri
Schruben, Leonard W, Agriculture Economics
Schueneman, Thomas J, Horticulture
Schuette, Clifford G, Center for Stud Develop
Schuette, Paul H, Mathematics
Schultz, A Jay, Forestry
Schumacher, Cloris K, County Extension Agents
Schumm, Walter R, Family and Child Develop
Schurle, Bryan W, Agriculture Economics
Schuster, Nancy D, County Extension Agents
Schwab, Arthur P, Agronomy
Schwarz, Michael D, Agricultural Engineering
Schwarzentraub, Mark A, Agriculture Economics
Schwenk, Fred W, Plant Pathology
Schwulst, Franklyn J, Colby Branch Station
Scimeca, Joseph M Jr, Pathology
Scott, Michael, Intercollegiate Athl Inc
Scott, Michael R, Office of Univ Relations
Scott, Vera A, Library
Scoville, Orlin J, Agriculture Economics
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Seal, Mary Jane, Department of Housing
Seamon, David R, Architecture
Sears, Rollin G, Agronomy
Seastedt, Timothy R, Division of Biology
Seaton, Richard H, Office of the President
Seefeldt, Richard W, Center for Stud Develop
Sego, Ruby J, Dean of Home Economics
Seib, Paul A, Grain Science and Industry
Seibold, Llewellyn D, Architecture
Seifers, Dallas L, Fort Hays Branch Station
Seitz, Larry M, Grain Science and Industry
Selfridge, O John, Regional and Community Plann
Sell, Philip L, County Extension Agents
Seltzer, Kathryn N, English
Setser, Carole S, Foods and Nutrition
Setser, Donald W, Chemistry
Setterquist, Charles P, Dean of Vet Medical Center
Seyfert, Ronald J, County Extension Agents
Seyler, Harry L, Geography
Shaffer, Teresa A, County Extension Agents
Shanteau, James C, Psychology
Sharifi, Behrooz G, Division of Biology
Sharp, Wanda H, Management
Shastri, Kaminim, Biochemistry
Shaw, Bradley A, Modern Languages
Shellenberger, John A, Grain Science and Industry
Shelley, Rita L, Cont Ed Development
Shelton, Lewis E, Speech
Shenkel, Claude W Jr, Geology
Shepard, Jim B, Fac Architectural Service
Sherraden, Mark L, Extension Information
Shields, Sandra A, County Extension Agents
Shields, Steven M, Division of Biology
Shoemaker, Frank L, County Extension Agents
Shoemaker, Lori L, County Extension Agents
Shogren, Merle D, Grain Science and Industry
Shoop, Robert J, Admin and Foundations of Edu
Shoulberg, Donald J, Family and Child Develop
Shrimplin, Virginia L, Cont Ed Academic Outreach
Shroyer, James P, Agronomy
Shugart, Grace M, Dietetics Rest and Inst Mgmt
Shugoll, Robert M, Student Health
Shull, Paul E, Music
Shult, Ernest E, Mathematics
Shultis, J Kenneth, Nuclear Engineering
Shuyler, Harlan R, Grain Science and Industry
Siddall, William R, Geography
Siderewicz, Mary C, Center for Stud Develop
Sidorfsky, Frank M, Music
Siebert, Jay D, International Agri Program
Siemens, Cynthia R, County Extension Agents
Sigler, Dennis H, Animal Sciences and Industry
Sill, Owen W, Intercollegiate Athl Inc
Silliman, Benjamin, Center for Stud Develop
Sills, Jack L, K-State Union
Sim Iv, Thomas, Plant Pathology
Simms, Danny D, Ext Org and Supv of Field Op
Simonis, Patricia L, Dietetics Rest and Inst Mgmt
Simons, Gale G, Nuclear Engineering
Simpson, Christy A, Diagnostic Laboratory
Sinha, Subhash C, Mechanical Engineering
Sinn, Melinda L, Cont Ed Regents Telenet
Sinnett, E Robert, Admin and Foundations of Edu
Sisk, Ensley J, Ext Org and Supv of Field Op
Sisson, James B, Agronomy
Sisson, Mary K, K-State Union
Sjo, John B, Agriculture Economics
Skidmore, Edward L, Agronomy
Skidmore, Wendy J, Animal Sciences and Industry
Skinner, Daniel Z, Plant Pathology
Slack, E Rex, Architecture
Slater, V Diane, Library
Slinkman, Zoe E, Extension Home Economics
Sloat, Floyd B, Mathematics
Sloderbeck, Phillip E, Ext Org and Supv of Field Op
Sloop, Jean C, Music
Smaltz, Jacob J, Industrial Engineering
Smetana, Ron, Cont Ed Academic Outreach
Smethers, Howard D, Curriculum and Instruction
Smethers, J Steven, Journalism and Mass Comm
Smith, Ann S, Division of Biology
Smith, Bob L, Civil Engineering
Smith, Carol A, Cont Ed Conferences
Smith, Carolyn J, Library
Smith, Carrie J, Soc Anthro and Social Work
Smith, Charles A, Extension Home Economics
Smith, Charles W, County Extension Agents
Smith, Christopher C, Division of Biology
Smith, David R, Agriculture Economics
Smith, Edgar F, Animal Sciences and Industry
Smith, Floyd W, Agronomy
Smith, Guy M, Student Health
Smith, Jana M, Surgery and Medicine
Smith, Jenell M, County Extension Agents
Smith, John F, County Extension Agents
Smith, Joseph E, Pathology

Smith, Joseph M, County Extension Agents
Smith, Karma I, English
Smith, Meredith F, Foods and Nutrition
Smith, Nancy J, Curriculum and Instruction
Smith, Ray V, Soc Anthro and Social Work
Smith, Robin, Philosophy
Smith, Walter D, K-State Union
Smith, Walter H, Animal Sciences and Industry
Snead, Bruce C, Director of Coop Extension
Snell, Richard C, County Extension Agents
Snell, Robert R, Civil Engineering
Snyder, Edward B, Plant Pathology
Snyder, Florence E, English
Sobering, Frederic D, Director of Coop Extension
Socolofsky, Homer E, History
Sorensen, Christopher M, Physics
Sorensen, Edgar L, Agronomy
Sorenson, L Orlo, Agriculture Economics
Spaeth, Clifford W, Animal Sciences and Industry
Spangler, John D, Physics
Spanogle, William E III, Agronomy
Sparke, Ann J, County Extension Agents
Spaulding, Gregory L, Engineering Technology
Spears, Marian C, Dietetics Rest and Inst Mgmt
Spencer-Carver, Elaine, Center for Stud Develop
Spencer, Albert E, County Extension Agents
Spiker, Terryl R, County Extension Agents
Spillman, Charles K, Agricultural Engineering
Spire, Mark F, Surgery and Medicine
Spooner, Brian S, Division of Biology
Springer, Kenton B, County Extension Agents
Stagg, Beverly D, County Extension Agents
Stahlman, Phillip W, Fort Hays Branch Station
Stalec, Theodore, Physics
Stamey, William L, Dean of Arts and Sciences
Stanley, Ruth Ann, Cont Ed Sponsored Projects
Stark, Carolee A, Dean of Engineering
Stark, Clifford Gerard, Computer Science
Stark, Maurice E, Accounting
Starkey, Winona M, Extension Home Economics
Starnes, Tommy, Regional and Community Plann
Stayton, Mark M, Chemical Engineering
Steffen, John D, Admin and Foundations of Edu
Steffens, Patricia E, Extension Nutrition Prog
Stegmeier, William D, Fort Hays Branch Station
Steichen, James M, Agricultural Engineering
Steinbauer, Rohert A, Music
Stephens, Janet F, County Extension Agents
Stevens, Carl A Jr, Grain Science and Industry
Stevens, Henry H, Grain Science and Industry
Stevens, Mark G, Plant Pathology
Stevenson, Barta M, Clothing Textiles and In Des
Stevenson, Jeffrey S, Animal Sciences and Industry
Stevenson, Paul N, Agricultural Engineering
Stewart, Donald C, English
Stewart, G Kent, Admin and Foundations of Edu
Stewart, Kay C, Dean of Business Administr
Stewart, Patricia L, English
Stinson, Thomas B, Tribune Branch Station
Stites, Dean E, County Extension Agents
Stith, Gary W, Regional and Community Plann
Stith, Marjorie M, Family and Child Develop
Stockard, John R, Extension Information
Stone, Arthur J Jr, Fac Traffic
Stone, Loyd R, Agronomy
Stone, Martha B, Foods and Nutrition
Stone, Paul R, Admin and Foundations of Edu
Stoner, K Lynn, History
Stotesbury, Sidney D, Architecture
Stouse, Lawrence D, County Extension Agents
Stover, Enid H, Center for Stud Develop
Stover, Harold E, Agricultural Engineering
Stover, Stephen L, Geography
Stowe, Barbara S, Dean of Home Economics
Strafuss, Albert C, Pathology
Strassburger, Sally A, Pe Dance and Leisure Studies
Strecker, George E, Mathematics
Strecker, Mary F, Accounting
Streeter, Jeanne E, Chemical Engineering
Strickler, John K, Forestry
Strine, James H, Forestry
Stroade, Richard D, County Extension Agents
Stroh, Charles L, Art
Stroh, Meredith P, Extension Home Economics
Stromberg, Karl R, Mathematics
Stroud, Nelson E, County Extension Agents
Stryker, Marilyn B, Extension Home Economics
Stuart, Jeffrey J, Entomology
Stuhban, Vanessa L, Library
Stucky, Timothy A, Agriculture Economics
Stumpehauser, Laszlo, Pe Dance and Leisure Studies
Stunkel, Edith L, Soc Anthro and Social Work
Sturdevant, James W, Agriculture Economics
Sturr, Edward R, Art
Sturr, Penny, Speech
Stuteville, Donald L, Plant Pathology
Suderman, Arlan J, Department of Housing
Suleiman, Michael W, Political Science
Sullins, William S, Extension Information
Sullivan, Rawlie R, Marketing
Sullivan, Ronald W, Landscape Architecture
Sumnerhill, R Richard, Mathematics
Sunderman, Herbert D, Colby Branch Station
Sundheim, Richard A, Statistics
Surowski, David B, Mathematics
Sutton, Mary Ellen, Music
Swallow, Clarence W, Agronomy
Swan, Frank D, County Extension Agents
Swart, Sandra K, County Extension Agents
Swartz, Stuart E, Civil Engineering
Sweeney, Daniel W, Southeast Kansas Branch St
Sweeney, Jane M, Division of Biology
Swegle, William M, Biochemistry
Swenson, Shelley E, County Extension Agents
Swihart, Judson J, Family and Child Develop
Swiler, James P, Art
Swisher, Brian A, County Extension Agents
Swisher, Mary T, County Extension Agents
Switzer, Veryl A, Vice-Pres for Stud Affairs
Tacha, Karolyn K, Cont Ed Conferences
Takemoto, Dolores J, Biochemistry
Takemoto, Larry J, Division of Biology
Tannehill, Linda K, County Extension Agents
Tarrant, Donald H, Educational Resources
Tatarko, John, Agronomy
Taussig, Robert A, Surgery and Medicine
Taylor, Ellyn M, Library
Taylor, Paul G, Adult and Occupational Educa
Taylor, Robert B, Soc Anthro and Social Work
Taylor, Sherwood A, Intercollegiate Athl Inc
Taylor, Thomas W, Physics
Teaford, Lynne A, Horticulture
Teagarden, Earl II, Extension Information
Teneyck, George R, Agricultural Engineering
Tennant, Marjorie A, Extension Information
Terrass, Joyce J, Adult and Occupational Educa
Terry, Rhonda G, Computer Science
Terry, Roger V, Computer Science
Thayer, Donald R, Animal Sciences and Industry
Thien, Stephen J, Agronomy
Thiessen, Emil A, Management
Thoden, Nada F, County Extension Agents
Thole, H Thomas, County Extension Agents
Thomas, Kenneth E, Public Affairs Info and Dev
Thomas, Lloyd B Jr, Economics
Thomas, Manuel A Jr, Laboratory Medicine
Thomas, Wilton B, Agriculture Economics
Thompson, Carlyle A, Fort Hays Branch Station
Thompson, Charles P, Psychology
Thompson, Dorothy L, Affirmative Action
Thompson, George H II, Pre Design Professions
Thompson, Hugh E, Entomology
Thompson, J Garth, Mechanical Engineering
Thorsell, G Catherine, County Extension Agents
Thorson, I Eugene, Arch Engr and Const Sci
Thull, Gary L, Internat Trade Institute
Thurlow, Lynn E, County Extension Agents
Thurn, Kerry K, Plant Pathology
Tiao, Joe M, Agriculture Economics
Tierney, William I Jr, Agriculture Economics
Tilghman, Benjamin R, Philosophy
Tillman, Frank A, Industrial Engineering
Tinklin, Gwendolyn L, Foods and Nutrition
Tisserat, Ned A, Plant Pathology
Tittel, Ronald Lee, County Extension Agents
Titus, Ralph S, Extension Information
Todd, Theresa Gesell, Entomology
Todd, Timothy C, Plant Pathology
Tomb, Andrew S III, Division of Biology
Tomecek, Martha B, Dean of Agri and Dir of Aes
Tonn, Gerhart E, Dietetics Rest and Inst Mgmt
Tonn, Steven R, County Extension Agents
Toot, Janice C, County Extension Agents
Tout, Robert C, Student Health
Towers, Richard E, Intercollegiate Athletics
Towne, Earl E, Agronomy
Townsend, Harvard C, Computer Science
Townsend, James B, Management
Traeger, Jayne M, Horticulture
Travnicek, Robert G, Surgery and Medicine
Treadway, Kathryn A, Curriculum and Instruction
Treat, Jay L, Ext Org and Supv of Field Op
Tremblay, Victor J, Economics
Trenary, Roger C, Economics
Trennepohl, Harlan J, Curriculum and Instruction
Trent, Cynthia Y, Cont Ed Academic Outreach
Tretbar, Harvey A, Dietetics Rest and Inst Mgmt
Trexler, Kimberly B, County Extension Agents
Tripp, Wilson, Mechanical Engineering
Trott, Gary J, Physics
Trotter, Donald M, Dean of Vet Medical Center
Trotter, Marilyn B, New Student Programs
Troyer, Deryl L, Anatomy And Physiology
Troyer, Rod, Interior Architecture
Truax, Ruby C, County Extension Agents
Tsen, Cho C, Grain Science and Industry
Tucker, Diann G, County Extension Agents
Tucker, Mary E, Extension Home Economics
Tucker, Tammy J, Foods and Nutrition
Tunstall, George C, Modern Languages
Turnquist, Ralph O, Mechanical Engineering
Twiss, Nancy H, Dean of Arts and Sciences
Twiss, Page C, Geology
Tye, Sharon A, Department of Housing
Tyrell, Robert K, Agriculture Economics
Uhlarik, John J, Psychology
Ul Karim, Muhammad A, Regional and Community Plann
Underbjerg, G K, Anatomy And Physiology
Underwood, James R Jr, Geology
Unekis, Joseph K, Political Science
Unger, Elizaheth A, Computer Science
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Unruh, Larry, Agronomy
Unruh, Natalie C, Grain Science and Industry
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Upson, Dan W, Anatomy And Physiology
Urban, Dianne K, Center for Stud Develop
Urban, James E, Division of Biology
Utermoehlen, Ralph E, Ext Org and Supv of Field Op
Uthoff, John S, Speech
Uthoff, Linda H, Speech
Utsey, Jordan B, Dean of Education
Vacin, Gary L, Extension Information
Vaden, Allene G, Dietetics Rest and Inst Mgmt
Vaden, Richard E, Management
Vaithianathan, Muthuraj, Industrial Engineering
Vallance, Elizabeth J, Cont Ed Academic Outreach
Van Der Hoeven, Gustaaf, Horticulture
Van Swaay, Maarten, Computer Science
Vance, Darline G, English
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Vanderlip, Richard L, Agronomy
Vandeventer, W Harold, Architecture
Vaneschen, John, Department of Housing
Vanhorn, Pamela I, County Extension Agents
Vanmeter, Earl L, County Extension Agents
Vanskike, Keith P, County Extension Agents
Vanskike, William V, County Extension Agents
Vargas Vargas, Jose, Animal Sciences and Industry
Vaughan, Arthur R, Engineering Technology
Verschelden, Cia, Department of Housing
Vestweber, Jerome G E, Surgery and Medicine
Vetter, James, Grain Science and Industry
Villasi, Ludwig G, Clothing Textiles and In Des
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Voet, Mary K, County Extension Agents
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Vorhees, Victor J, Dietetics Rest and Inst Mgmt
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Waddell, Merrilee S, Entomology
Wagner, Stanley D, Surgery and Medicine
Wakabayashi, Isaac, Electrical Engineering
Walawender, Walter P Jr, Chemical Engineering
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Walker, Doris K, Extension Home Economics

Walker, Hugh S, Mechanical Engineering
Walker, Margaret Y, Music
Walker, Marshall F, County Extension Agents
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Walker, Rodney G, Music
Walker, Warren V, Music
Wallentine, Virgil E, Computer Science
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Walters, Charles P, Geology
Walters, Glenda S, Student Financial Asstnce
Wanska, Susan K, Family and Child Develop
Ward, George M, Animal Sciences and Industry
Ward, James D, Soc Anthro and Social Work
Ward, Joe E Jr, Electrical Engineering
Ward, Kathleen, Extension Information
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